GenCore version 4.5
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OM nucleic - nucleic search, using sw model

Run on: June 30, 2002, 14:19:10 ; Search time 2325.7 Seconds
(without alignments)
1233.592 Million cell updates/sec

Title: US-09-303-518D-465
Perfect score: 1671
Sequence: 1 ttgggcatttcccgcaaaat.....gaaagattacacacaaatga 1671

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 1736436 seqs, 858457221 residues

Total number of hits satisfying chosen parameters: 3472872

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 100 summaries

Database : N_Geneseq_032802:*
1: /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1980.DAT:*
2: /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1981.DAT:*
3: /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1982.DAT:*
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5: /SIDS1/gcgdata/geneseq/geneseqn-embl/NA1984.DAT:*
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23: /SIDS1/gcgdata/geneseq/geneseqn-embl/NA2001B.DAT:*
24: /SIDS1/gcgdata/geneseq/geneseqn-embl/NA2002.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	1671	100.0	1671	20	AAZ12174	Neisseria meningit
2	1248.2	74.7	1827	21	AAF21588	N. meningitidis pa
3	1248.2	74.7	1827	21	AAA81303	N. meningitidis pa
4	1248.2	74.7	349980	21	AAF21608	Neisseria meningit
5	1231.2	73.7	1887	20	AAZ12173	Neisseria gonorrho
6	1176.2	70.4	2028	22	AAS43881	Neisseria meningit
7	1176.2	70.4	2028	22	AAD17046	N. meningitidis st
8	1176.2	70.4	4425	22	AAS43874	Neisseria meningit
9	1176.2	70.4	4425	22	AAD17039	N. meningitidis st
10	1175.6	70.4	2019	22	AAS43894	Neisseria meningit
11	1175.6	70.4	2019	22	AAD17047	N. meningitidis st
12	1175.6	70.4	2256	22	AAS43896	Neisseria meningit
13	1175.6	70.4	2256	22	AAD17049	N. meningitidis st
14	1175.6	70.4	2421	22	AAS43895	Neisseria meningit
15	1175.6	70.4	2421	22	AAD17048	N. meningitidis st
16	1174.4	70.3	2304	22	AAS43903	Neisseria meningit
17	1174.4	70.3	2304	22	AAD17056	N. meningitidis st
18	1174.2	70.3	2256	22	AAS43900	Neisseria meningit
19	1174.2	70.3	2256	22	AAD17053	N. meningitidis st
20	1174.2	70.3	2421	22	AAS43897	Neisseria meningit
21	1174.2	70.3	2421	22	AAD17050	N. meningitidis st
c 22	654	39.1	684	21	AAA81504	N. meningitidis pa
23	653.4	39.1	683	20	AAZ12172	Neisseria meningit
24	563.8	33.7	837096	21	AAA81489	N. meningitidis pa
c 25	396	23.7	396	21	AAZ54164	Neisseria meningit
c 26	387	23.2	492	21	AAZ54163	Neisseria meningit
c 27	384.8	23.0	396	21	AAZ54162	Neisseria gonorrhe
28	302	18.1	1731	21	AAZ54260	Neisseria gonorrhe
29	294.4	17.6	1404	21	AAZ54261	Neisseria meningit
c 30	294.4	17.6	25509	21	AAA81467	N. meningitidis pa
c 31	294.4	17.6	349980	21	AAF21607	Neisseria meningit
32	286	17.1	1497	21	AAZ54262	Neisseria meningit
33	121.8	7.3	1497	20	AAZ12046	Neisseria gonorrho
34	121.8	7.3	1497	21	AAZ53469	Neisseria gonorrhe
35	121.8	7.3	3287	18	AAT70386	Neisseria adhesion
36	110.2	6.6	1155	21	AAZ53471	Neisseria meningit
37	107.2	6.4	1449	20	AAZ12045	Neisseria meningit
38	107	6.4	1452	20	AAZ12044	Neisseria meningit
39	107	6.4	1452	21	AAZ53470	Neisseria meningit
40	107	6.4	92934	21	AAA81473	N. meningitidis pa
41	107	6.4	172325	21	AAF21613	Neisseria meningit
42	98	5.9	375	20	AAZ12043	Neisseria meningit
43	98	5.9	375	21	AAA81340	N. meningitidis Me
44	45.4	2.7	349980	21	AAF21611	Neisseria meningit
45	39.8	2.4	390	13	AAQ21833	Randomising oligon
46	39.8	2.4	390	14	AAQ36859	PCR primer for 5'
47	39.8	2.4	390	22	AAF76910	Sequence containin
c 48	39	2.3	5384	24	ABL32208	Human immune syste
49	38.8	2.3	10732	21	AAA10594	Gene encoding a su
50	38.6	2.3	882	19	AAV64512	M. tuberculosis im
51	38.6	2.3	882	19	AAV44403	Mycobacterium tube
52	38.6	2.3	882	20	AAZ19313	M. tuberculosis an
53	38.6	2.3	882	20	AAZ19101	M. tuberculosis re
c 54	38.6	2.3	16127	24	ABL32745	Human immune syste
c 55	37.6	2.3	114955	20	AAX53491	Human adenosine A1
c 56	37.4	2.2	2762	22	AAF67827	Corynebacterium gl
c 57	37.4	2.2	8979	22	AAH67704	C glutamicum codin
58	37.4	2.2	349980	22	AAH68532	C glutamicum codin
c 59	37.2	2.2	15768	24	ABL33170	Human immune syste
60	37	2.2	810	12	AAQ13853	N-acetyl mannosami
61	37	2.2	1264	20	AAZ20927	Nucleotide sequenc
62	37	2.2	5042	22	AAC81498	Human megakaryocyt
63	37	2.2	4403765	22	AAI99683	Mycobacterium tube
c 64	36.8	2.2	5378	24	ABL33878	Human immune syste
c 65	36.8	2.2	5944	24	ABL32252	Human immune syste
66	36.8	2.2	11014	18	AAV74402	Staphylococcus aur
67	36.6	2.2	400	19	AAV64545	M. tuberculosis im
68	36.6	2.2	400	19	AAV44436	Mycobacterium tube
69	36.6	2.2	400	20	AAZ19346	M. tuberculosis an
70	36.6	2.2	400	20	AAZ19134	M. tuberculosis re
71	36.6	2.2	695	22	AAF68020	Corynebacterium gl
c 72	36.6	2.2	933	23	AAS54355	Pseudomonas aerugi
73	36.6	2.2	349980	22	AAH68530	C glutamicum codin
c 74	36.6	2.2	4411529	22	AAI99682	Mycobacterium tube
c 75	36.4	2.2	1001	21	AAC57560	Arachidonic acid m
c 76	36.4	2.2	2037	22	AAH67460	C glutamicum codin
c 77	36.4	2.2	349980	22	AAH68531	C glutamicum codin
c 78	36.4	2.2	349980	22	AAH68532	C glutamicum codin
c 79	36.2	2.2	6522	24	ABL33802	Human immune syste
c 80	36.2	2.2	7829	24	ABL33104	Human immune syste
c 81	36.2	2.2	7829	24	AAS61190	Human gene regulat
82	36.2	2.2	16831	23	AAS59607	Propionibacterium

83	36	2.2	1320	22	AAD03885	Stenotrophomonas s
84	36	2.2	2510	22	AAD03886	Maize CA55 promote
85	36	2.2	2932	22	AAD03887	Rice T72 promoter-
86	36	2.2	6215	22	AAD03876	NotI fragment of p
87	36	2.2	6579	22	AAD03877	NotI fragment of p
88	36	2.2	6667	22	AAD03878	NotI fragment of p
89	35.8	2.1	1948	12	AAQ12693	Toxin A gene fragm
90	35.8	2.1	2507	21	AAC62061	DNA encoding a rec
91	35.8	2.1	2507	21	AAC62221	DNA encoding a rec
92	35.8	2.1	7733	22	AAH02136	Clostridium diffic
93	35.8	2.1	8133	17	AAT29248	C. difficile toxin
94	35.8	2.1	8133	19	AAV30560	Clostridium diffic
95	35.8	2.1	910715	20	AAX20248	Borrelia burgdorfe
c 96	35.8	2.1	4403765	22	AAI99683	Mycobacterium tube
c 97	35.6	2.1	790	16	AAQ99806	Plant SAR gene PSI
c 98	35.6	2.1	839	21	AAC49215	Arabidopsis thalia
99	35.6	2.1	3087	23	AAS52248	Staphylococcus aur
100	35.6	2.1	3144	23	AAS55348	Staphylococcus aur

ALIGNMENTS

RESULT 1
AAZ12174
ID AAZ12174 standard; DNA; 1671 BP.
XX
AC AAZ12174;
XX
DT 08-OCT-1999 (first entry)
XX
DE Neisseria meningitidis strain A complete ORF46 sequence.
XX
KW Neisseria meningitidis; Neisseria gonorrhoeae; antigen; vaccine;
KW treatment; Neisseria infection; meningitis; septicaemia; gonorrhea; ss.
XX
OS Neisseria meningitidis.
XX
PN WO9924578-A2.
XX
PD 20-MAY-1999.
XX
PF 09-OCT-1998; 98WO-IB01665.
XX
PR 01-SEP-1998; 98GB-0019016.
PR 06-NOV-1997; 97GB-0023516.
PR 14-NOV-1997; 97GB-0024190.
PR 18-NOV-1997; 97GB-0024386.
PR 27-NOV-1997; 97GB-0025158.
PR 10-DEC-1997; 97GB-0026147.
PR 14-JAN-1998; 98GB-0000759.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Grandi G, Masignani V, Pizza M, Rappuoli R, Scarlato V;
XX
DR WPI; 1999-327407/27.
DR P-PSDB; AAY38731.
XX
PT Proteins from Neisseria meningitidis and N. gonorrhoeae useful for
PT diagnosis, treatment and prevention of infection
XX
PS Claim 9; Page 276-277; 524pp; English.
XX
CC Nucleotide sequences AAZ11972-Z12358 represent open reading frames
CC (ORFs) of Neisseria meningitidis and N. gonorrhoeae which encode
CC antigenic proteins (see AAY38499-Y38944). The antigenic proteins, their
CC fragments, their nucleic acids and antibodies are used for diagnosis,
CC prevention (as vaccines) or treatment of Neisseria infections,
CC such as meningitis, septicaemia and gonorrhea. Both organisms
CC are closely related. Fragments of the nucleic acids are useful
CC as hybridisation probes and antisense reagents.
XX

SQ Sequence 1671 BP; 484 A; 440 C; 402 G; 345 T; 0 other;

Query Match 100.0%; Score 1671; DB 20; Length 1671;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1671; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy       1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60

Qy      61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120

Qy     121 catttcgaacccgacgggaaataccacctattcggcagcagggggggaacttgccgagcgc 180
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     121 catttcgaacccgacgggaaataccacctattcggcagcagggggggaacttgccgagcgc 180

Qy     181 agcggtcatatcggattgggaaacatacaaagccatcagttgggcaacctgttcatccag 240
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     181 agcggtcatatcggattgggaaacatacaaagccatcagttgggcaacctgttcatccag 240

Qy     241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300

Qy     301 gtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     301 gtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360

Qy     361 gttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     361 gttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420

Qy     421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480

Qy     481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540

Qy     541 accggacaacggcttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagta 600
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy     601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660
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Db     601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660

Qy     661 gccgaagctttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaa 720
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     661 gccgaagctttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaa 720

Qy     721 attgtcggcgcaggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatg 780
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     721 attgtcggcgcaggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatg 780

Qy     781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840

Qy     841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900

Qy     901 aatgccgcacaaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaa 960
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     901 aatgccgcacaaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaa 960

Qy     961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaag 1020
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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```
Db    961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaag 1020

Qy   1021 cggtcgcagatgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1021 cggtcgcagatgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080

Qy   1081 gccgatgcggcatacgccaaatacccgtccccttaccattcccgaaatatccgttcaaac 1140
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy   1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacgga 1200
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy   1201 aagaatgtgaaactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaa 1260
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Db   1201 aagaatgtgaaactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaa 1260

Qy   1261 gggtttccgaattttgaaaaagacgtaaaatacgatacgagaattaataccgctgtacca 1320
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1261 gggtttccgaattttgaaaaagacgtaaaatacgatacgagaattaataccgctgtacca 1320

Qy   1321 caagtgaatcctatagatgaacccgtctttaatcctaaaggttctgtcggatcggctcat 1380
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1321 caagtgaatcctatagatgaacccgtctttaatcctaaaggttctgtcggatcggctcat 1380

Qy   1381 tcttggtctataactgccagaattcaatacgcaaaattaccaaggcaaggtagaatcaga 1440
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1381 tcttggtctataactgccagaattcaatacgcaaaattaccaaggcaaggtagaatcaga 1440

Qy   1441 tatatcccacctaaaaattactctccttcagcaccgctaccaaaaggacctaataatgga 1500
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1441 tatatcccacctaaaaattactctccttcagcaccgctaccaaaaggacctaataatgga 1500

Qy   1501 tatttggataaatttggtaatgaatggactaaaggtccatcaagaactaaaggtcaagaa 1560
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1501 tatttggataaatttggtaatgaatggactaaaggtccatcaagaactaaaggtcaagaa 1560

Qy   1561 tttgaatgggatgttcaattgtctaaaacaggaagagagcaacttggatgggctagtagg 1620
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1561 tttgaatgggatgttcaattgtctaaaacaggaagagagcaacttggatgggctagtagg 1620

Qy   1621 gatggtaagcatttaaatatatcaattgatggaaagattacacacaaatga 1671
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Db   1621 gatggtaagcatttaaatatatcaattgatggaaagattacacacaaatga 1671
```

```
RESULT   2
AAF21588
ID   AAF21588 standard; DNA; 1827 BP.
XX
AC   AAF21588;
XX
DT   13-MAR-2001  (first entry)
XX
DE   N. meningitidis partial DNA sequence orf46-2.seq SEQ ID NO:88.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; immunogenic; vaccine;
KW   diagnosis; antigen; detection; infection; gene therapy; antibacterial;
KW   ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO200066791-A1.
XX
PD   09-NOV-2000.
XX
PF   08-MAR-2000; 2000WO-US05928.
XX
PR   30-APR-1999;   99US-0132068.
PR   08-OCT-1999;   99WO-US23573.
PR   28-FEB-2000; 2000GB-0004695.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Pizza M,  Hickey E,  Peterson J,  Tettelin H,  Venter JC,  Masignani V;
PI   Galeotti C,  Mora M,  Ratti G,  Scarselli M,  Scarlato V,  Rappuoli R;
PI   Frazer CM,  Grandi G;
XX
DR   WPI; 2000-647603/62.
DR   P-PSDB; AAB58593.
XX
PT   Neisseria meningitidis B full length genome sequence and open reading
PT   frames are used to detect, treat and prevent Neisserial infections -
XX
PS   Example 1; Page 114-115; 692pp; English.
XX
CC   The present invention describes the full length genome of
CC   Neisseria meningitidis B (NMB). The sequences in AAF21544 and AAF21607
CC   to AAF21613 represent fragments of the NMB genomic sequence, as the
CC   sequence was too long to go in a record on its own it was split into 8
CC   sequences which overlap each other at the beginning and end of each
CC   sequence by 49980 bp (i.e. the last 49980 bp of AAF21544 is repeated at
CC   the beginning  of AAF21607, the last 49980 bp of AAF21607 are repeated at
CC   the beginning of AAF21608, and so on). AAF21545 to AAF21588 encode the
CC   Neisseria proteins given in AAB58550 to AAB58593, and AAF21589 to
CC   AAF21606 represent PCR primers which are used in the exemplification of
CC   the present invention. The NMB genome and fragments from it have
CC   antibacterial activity, and can be used in vaccines and gene therapy.
CC   Neisseria nucleic acids, proteins and/or antibodies which binds to the
CC   proteins can be used in compositions for treating or preventing infection
CC   due to Neisserial bacteria or as a diagnostic reagent for detecting the
CC   presence of Neisserial bacteria or of antibodies raised to Neisserial
CC   bacteria. Computers, computer memory, computer storage medium or computer
CC   databases can be used in a search to identify open reading frames (ORFs)
CC   or coding sequences within the NMB genome. The DNA sequences provide
CC   further opportunities to find antigenic or immunogenic proteins which are
CC   more effective in vaccines than the outer membrane proteins currently
CC   used.
XX
SQ   Sequence 1827 BP; 539 A; 446 C; 454 G; 387 T; 1 other;
```

```
  Query Match             74.7%;  Score 1248.2;  DB 21;  Length 1827;
  Best Local Similarity   97.1%;  Pred. No. 0;
  Matches 1271;  Conservative    0;  Mismatches   38;  Indels    0;  Gaps    0;

Qy       1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60

Qy      61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120

Qy     121 catttcgaacccgacgggaaatacccacctattcggcagcagggggaacttgccgagcgc 180
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     121 catttcgaacccgacgggaaatacccacctattcggcagcagggggaacttgccgagcgc 180

Qy     181 agcggtcatatcggattgggaaacatacaaagccatcagttgggcaacctgttcatccag 240
           ||||| |||||||||||||||| ||||||||||||||||||||||||| | || ||
Db     181 agcggccatatcggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaa 240

Qy     241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300

Qy     301 gtccattcccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     301 gtccattcccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360

Qy     361 gttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420
           |||||||||| ||||||||||||||||||||||||||||||||||||||||||||||||
Db     361 gttgacggatttagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420
```

```
Qy    421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480

Qy    481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540

Qy    541 accggacaacggcttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagta 600
          |||||||||||||||| |||||||||||||||| ||||||||||||||||||||||||||||
Db    541 accggacaacggcttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagta 600

Qy    601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660

Qy    661 gccgaagctttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaa 720
          |||||||| |||||||||||||||||||||| ||||||||||||||||||||||||||||||
Db    661 gccgaagccttcaacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaa 720

Qy    721 attgtcggcgcaggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatg 780
          |||||||||||||||||||||||||||||||| |||||||||||||||||||||||||| |||
Db    721 attgtcggcgcaggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatg 780

Qy    781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840

Qy    841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900

Qy    901 aatgccgcacaaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaa 960
          |||||||||||||||||||||||||||||||||||||||| ||||| ||||||| |||||
Db    901 aatgccgcacaaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaa 960

Qy    961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaag 1020
          |||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||
Db    961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctatcaag 1020

Qy   1021 cggtcgcagatgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080
          |||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||||
Db   1021 cggtcgcagatgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080

Qy   1081 gccgatgcggcatacgccaaatacccgtcccctaccattcccgaaatatccgttcaaac 1140
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1081 gccgatgcggcatacgccaaatacccgtcccctaccattcccgaaatatccgttcaaac 1140

Qy   1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacgga 1200
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggc 1200

Qy   1201 aagaatgtgaaactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaa 1260
          || ||||| ||||||||| || ||||||||||||||||    || ||||||||||||||||
Db   1201 aaaaatgtcaaactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaa 1260

Qy   1261 gggtttccgaattttgaaaaagacgtaaaatacgatacgagaattaata 1309
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Db   1261 gggtttccgaattttgagaagcacgtgaaatatgatacgaagctcgata 1309
```

RESULT 3
AAA81303
ID AAA81303 standard; DNA; 1827 BP.
XX
AC AAA81303;
XX
DT 04-DEC-2000 (first entry)
XX
DE N. meningitidis partial DNA sequence orf46-2.seq SEQ ID NO:1048.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
KW antigen; vaccine; diagnosis; infection; antibacterial; identification;
KW Meningococcus B; MenB; ds.
XX
OS Neisseria meningitidis.
XX
PN WO200022430-A2.
XX
PD 20-APR-2000.
XX
PF 08-OCT-1999; 99WO-US23573.
XX
PR 09-OCT-1998; 98US-0103794.
PR 30-APR-1999; 99US-0132068.
XX
PA (CHIR) CHIRON CORP.
XX
PI Frazer CM, Hickey E, Peterson J, Tettelin H, Venter JC;
PI Masignani V, Galeotti C, Mora M, Ratti G, Scarselli M, Scarlato V;
PI Rappuoli R, Pizza M;
XX
DR WPI; 2000-318079/27.
DR P-PSDB; AAB25663.
XX
PT Isolated nucleotide sequences of Neisseria meningitidis which can be
PT used in the diagnosis and treatment of N. meningitidis infection and
PT other Neisserial infections, for example, N.gonorrhoea -
XX
PS Example 1; Page 114; 1760pp; English.
XX
CC The present invention describes methods of obtaining immunogenic
CC proteins from Neisseria genomic sequences. AAA81453 to AAA82414
CC represent specifically claimed Neisseria meningitidis genomic DNA
CC sequences; AAA81260 to AAA81303 and AAB25620 to AAB25663 represent
CC Neisseria DNA sequences and their corresponding proteins; AAA81254 to
CC AAA81259 and AAA81304 to AAA81321 represent PCR primers used in the
CC isolation of Neisseria meningitidis DNA sequences; and AAA81322 to
CC AAA81452 represent Neisseria meningitidis MenB polynucleotide ORF
CC sequences, which are all used in the exemplification of the present
CC invention. The nucleic acid sequences, protein sequences, and antibodies
CC against them, can be used in the manufacture of a composition. The
CC composition can be used as a medicament (or in the manufacture of a
CC medicament) for treating, preventing or diagnosing infection due to
CC Neisserial bacteria. For example, some of the identified proteins could
CC be components of vaccines against Meningococcus B; against all serotypes;
CC and/or against all pathogenic Neissariae. Identification of sequences
CC from the bacterium will also facilitate production of biological probes,
CC particularly organism-specific probes. Attempts to make efficacious
CC Meningococcus B vaccines have failed mainly due to antigen tolerance.
CC Multivalent vaccines have also been tried but none have successfully
CC overcome antigenic variability. The provision of further, complete
CC sequences may provide an opportunity to identify secreted or surface
CC exposed proteins that may be presumed targets for the immune system and
CC which are not antigenically variable or at least more conserved than
CC other more variable regions.
XX
SQ Sequence 1827 BP; 539 A; 446 C; 454 G; 387 T; 1 other;

Query Match 74.7%; Score 1248.2; DB 21; Length 1827;
Best Local Similarity 97.1%; Pred. No. 0;
Matches 1271; Conservative 0; Mismatches 38; Indels 0; Gaps 0;

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Qy      1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60
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Db      1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60

Qy     61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120

Qy    121 catttcgaacccgacgggaaataccacctattcggcagcaggggggaacttgccgagcgc 180
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    121 catttcgaacccgacgggaaataccacctattcggcagcaggggggaacttgccgagcgc 180
```

```
Qy    181 agcggtcatatcggattgggaaacatacaaagccatcagttgggcaacctgttcatccag 240
          ||||| ||||||||||||||||| ||||||||||||||||||||||||||| | || ||
Db    181 agcggccatatcggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaa 240

Qy    241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300

Qy    301 gtccattcccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    301 gtccattcccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360

Qy    361 gttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420
          |||||||||||| ||||||||||||||||||||||||||||||||||||||||||||||
Db    361 gttgacggatttagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420

Qy    421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480

Qy    481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540

Qy    541 accggacaacggcttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagta 600
          |||||||||||||| |||||||||||||||| ||||||||||||||||||||||||||||
Db    541 accggacaacggcttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagta 600

Qy    601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660

Qy    661 gccgaagctttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaa 720
          |||||||| |||||||||||||||||||| ||||||||||||||||||||||||||||||
Db    661 gccgaagccttcaacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaa 720

Qy    721 attgtcggcgcaggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatg 780
          |||||||||||||||||||||||||| |||||||||||||||||||||||||||||| |||
Db    721 attgtcggcgcaggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatg 780

Qy    781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840

Qy    841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900

Qy    901 aatgccgcacaaggcatagaagccgtcagcaatatctttacggcagtcatccacgtcaaa 960
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Db    901 aatgccgcacaaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaa 960

Qy    961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaag 1020
          |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||
Db    961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctatcaag 1020

Qy   1021 cggtcgcagatgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080
          ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||
Db   1021 cggtcgcagatgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080

Qy   1081 gccgatgcggcatacgccaaatacccgtcccccttaccattcccgaaatatccgttcaaac 1140
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1081 gccgatgcggcatacgccaaatacccgtcccccttaccattcccgaaatatccgttcaaac 1140

Qy   1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacgga 1200
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggc 1200

Qy   1201 aagaatgtgaaactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaa 1260
          || ||||| ||||||||| || ||||||||||||||    || ||||||||||||||||
Db   1201 aaaaatgtcaaactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaa 1260

Qy   1261 gggtttccgaattttgaaaaagacgtaaaatacgatacgagaattaata 1309
          ||||||||||||||||| ||  |||| ||||| |||||||   |  |||
Db   1261 gggtttccgaattttgagaagcacgtgaaatatgatacgaagctcgata 1309
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RESULT 4
AAF21608
ID AAF21608 standard; DNA; 349980 BP.
XX
AC AAF21608;
XX
DT 13-MAR-2001 (first entry)
XX
DE Neisseria meningitidis B nucleotide sequence SEQ ID NO:109.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; immunogenic; vaccine;
KW diagnosis; antigen; detection; infection; gene therapy; antibacterial;
KW ds.
XX
OS Neisseria meningitidis.
XX
PN WO200066791-A1.
XX
PD 09-NOV-2000.
XX
PF 08-MAR-2000; 2000WO-US05928.
XX
PR 30-APR-1999; 99US-0132068.
PR 08-OCT-1999; 99WO-US23573.
PR 28-FEB-2000; 2000GB-0004695.
XX
PA (CHIR) CHIRON CORP.
PA (GENO-) INST GENOMIC RES.
XX
PI Pizza M, Hickey E, Peterson J, Tettelin H, Venter JC, Masignani V;
PI Galeotti C, Mora M, Ratti G, Scarselli M, Scarlato V, Rappuoli R;
PI Frazer CM, Grandi G;
XX
DR WPI; 2000-647603/62.
XX
PT Neisseria meningitidis B full length genome sequence and open reading
PT frames are used to detect, treat and prevent Neisserial infections -
XX
PS Claim 7; Appendix A; 692pp; English.
XX
CC The present invention describes the full length genome of
CC Neisseria meningitidis B (NMB). The sequences in AAF21544 and AAF21607
CC to AAF21613 represent fragments of the NMB genomic sequence, as the
CC sequence was too long to go in a record on its own it was split into 8
CC sequences which overlap each other at the beginning and end of each
CC sequence by 49980 bp (i.e. the last 49980 bp of AAF21544 is repeated at
CC the beginning of AAF21607, the last 49980 bp of AAF21607 are repeated at
CC the beginning of AAF21608, and so on). AAF21545 to AAF21588 encode the
CC Neisseria proteins given in AAB58550 to AAB58593, and AAF21589 to
CC AAF21606 represent PCR primers which are used in the exemplification of
CC the present invention. The NMB genome and fragments from it have
CC antibacterial activity, and can be used in vaccines and gene therapy.
CC Neisseria nucleic acids, proteins and/or antibodies which binds to the
CC proteins can be used in compositions for treating or preventing infection
CC due to Neisserial bacteria or as a diagnostic reagent for detecting the
CC presence of Neisserial bacteria or of antibodies raised to Neisserial
CC bacteria. Computers, computer memory, computer storage medium or computer
CC databases can be used in a search to identify open reading frames (ORFs)
CC or coding sequences within the NMB genome. The DNA sequences provide
CC further opportunities to find antigenic or immunogenic proteins which are
CC more effective in vaccines than the outer membrane proteins currently
CC used.
XX
SQ Sequence 349980 BP; 82523 A; 82940 C; 96712 G; 87805 T; 0 other;

Query Match 74.7%; Score 1248.2; DB 21; Length 349980;
Best Local Similarity 97.1%; Pred. No. 0;
Matches 1271; Conservative 0; Mismatches 38; Indels 0; Gaps 0;

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Qy       1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60
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Db   75614 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 75673

Qy      61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   75674 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 75733

Qy     121 catttcgaacccgacgggaaataccacctattcggcagcagggggaacttgccgagcgc 180
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   75734 catttcgaacccgacgggaaataccacctattcggcagcagggggaacttgccgagcgc 75793

Qy     181 agcggtcatatcggattgggaaacatacaaagccatcagttgggcaacctgttcatccag 240
           ||||| |||||||||||||||| ||||||||||||||||||||||||||| | || ||
Db   75794 agcggccatatcggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaa 75853

Qy     241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   75854 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 75913

Qy     301 gtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   75914 gtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 75973

Qy     361 gttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420
           |||||||||||| ||||||||||||||||||||||||||||||||||||||||||||||
Db   75974 gttgacggatttagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 76033

Qy     421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   76034 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 76093

Qy     481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   76094 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 76153

Qy     541 accggacaacggcttgtcgaccgtttccacaatacccggtagtatgctgacgcaaggagta 600
           |||||||||||||||| |||||||||||||| |||||||||||||||||||||||||||
Db   76154 accggacaacggcttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagta 76213

Qy     601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   76214 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 76273

Qy     661 gccgaagctttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaa 720
           |||||||| |||||||||||||||||||||| |||||||||||||||||||||||||||
Db   76274 gccgaagccttcaacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaa 76333

Qy     721 attgtcggcgcaggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatg 780
           |||||||||||||||||||||||||||| |||||||||||||||||||||||||||| |||
Db   76334 attgtcggcgcaggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatg 76393

Qy     781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   76394 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 76453

Qy     841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   76454 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 76513

Qy     901 aatgccgcacaaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaa 960
           |||||||||||||||||||||||||||||||||||||| ||||| ||||||| |||||
Db   76514 aatgccgcacaaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaa 76573

Qy     961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaag 1020
           |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||
Db   76574 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctatcaag 76633

Qy    1021 cggtcgcagatgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080
           |||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||
Db   76634 cggtcgcagatgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 76693

Qy    1081 gccgatgcggcatacgccaaatacccgtccccttaccattcccgaaatatccgttcaaac 1140
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   76694 gccgatgcggcatacgccaaatacccgtccccttaccattcccgaaatatccgttcaaac 76753

Qy    1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacgga 1200
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   76754 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggc 76813

Qy    1201 aagaatgtgaaactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaa 1260
           || ||||| ||||||||| || ||||||||||||||||    || ||||||||||||||
Db   76814 aaaaatgtcaaactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaa 76873

Qy    1261 gggtttccgaattttgaaaaagacgtaaaatacgatacgagaattaata 1309
           |||||||||||||||| ||  |||| ||||| |||||||   |  |||
Db   76874 gggtttccgaattttgagaagcacgtgaaatatgatacgaagctcgata 76922
```

RESULT 5
AAZ12173
ID AAZ12173 standard; DNA; 1887 BP.
XX
AC AAZ12173;
XX
DT 08-OCT-1999 (first entry)
XX
DE Neisseria gonorrhoeae complete ORF46 sequence.
XX
KW Neisseria meningitidis; Neisseria gonorrhoeae; antigen; vaccine;
KW treatment; Neisseria infection; meningitis; septicaemia; gonorrhea; ss.
XX
OS Neisseria gonorrhoeae.
XX
PN WO9924578-A2.
XX
PD 20-MAY-1999.
XX
PF 09-OCT-1998; 98WO-IB01665.
XX
PR 01-SEP-1998; 98GB-0019016.
PR 06-NOV-1997; 97GB-0023516.
PR 14-NOV-1997; 97GB-0024190.
PR 18-NOV-1997; 97GB-0024386.
PR 27-NOV-1997; 97GB-0025158.
PR 10-DEC-1997; 97GB-0026147.
PR 14-JAN-1998; 98GB-0000759.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Grandi G, Masignani V, Pizza M, Rappuoli R, Scarlato V;
XX
DR WPI; 1999-327407/27.
DR P-PSDB; AAY38730.
XX
PT Proteins from Neisseria meningitidis and N. gonorrhoeae useful for
PT diagnosis, treatment and prevention of infection
XX
PS Claim 9; Page 274-275; 524pp; English.
XX
CC Nucleotide sequences AAZ11972-Z12358 represent open reading frames
CC (ORFs) of Neisseria meningitidis and N. gonorrhoeae which encode
CC antigenic proteins (see AAY38499-Y38944). The antigenic proteins, their
CC fragments, their nucleic acids and antibodies are used for diagnosis,
CC prevention (as vaccines) or treatment of Neisseria infections,
CC such as meningitis, septicaemia and gonorrhea. Both organisms
CC are closely related. Fragments of the nucleic acids are useful
CC as hybridisation probes and antisense reagents.
XX
SQ Sequence 1887 BP; 555 A; 468 C; 493 G; 370 T; 1 other;

Query Match 73.7%; Score 1231.2; DB 20; Length 1887;
Best Local Similarity 96.3%; Pred. No. 0;
Matches 1260; Conservative 0; Mismatches 49; Indels 0; Gaps 0;

```
Qy      1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1 ttgggcatttcccgcaaaatatcccttattctgtccatactggcagtgtgcctgccgatg 60

Qy     61 catgcacacgcctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcag 120
          |||||||||||||||||||||||||||| | ||||||||||||||||||||||||||||
Db     61 catgcacacgcctcagatttggcaaacgatcccttttatccggcaggttctcgaccgtcag 120

Qy    121 catttcgaacccgacgggaaatacccacctattcggcagcaggggggaacttgccgagcgc 180
          |||||||||||||||||||||||||||||||||||||||||||||||| ||||| |||||
Db    121 catttcgaacccgacgggaaatacccacctattcggcagcaggggggagcttgccnagcgc 180

Qy    181 agcggtcatatcggattgggaaacatacaaagccatcagttgggcaacctgttcatccag 240
          | ||| |||||||||||||||||||||||||||||||||||||||||| |||||| || ||
Db    181 aacggccatatcggattgggaaacatacaaagccatcagttgggccacctgatgattcaa 240

Qy    241 caggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaa 300
          ||||||||| || ||||||||||||||||||||||||||||||||||||||||||| ||
Db    241 caggcggccgttgaaggaaatatcggctacattgtccgcttttccgatcacgggcacaaa 300

Qy    301 gtccattcccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtccc 360
          |||||||| |||||||||||||||||||||||||||||||||||| ||||||||||||||
Db    301 ttccattcgcccttcgacaaccatgcctcacattccgattctgacgaagccggtagtccc 360

Qy    361 gttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    361 gttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgac 420

Qy    421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    421 ggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatac 480

Qy    481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    481 agctacgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagc 540

Qy    541 accggacaacggcttgtcgaccgtttccacaatacggtagtatgctgacgcaaggagta 600
          |||||||||||||||| |||||||||||||| ||||   ||||||||||||||||||||
Db    541 accggacaacggcttgccgaccgtttccacaatgccggcgctatgctgacgcaaggagta 600

Qy    601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    601 ggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgcc 660

Qy    661 gccgaagctttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaa 720
          ||||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db    661 gccgaagccttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaa 720

Qy    721 attgtcggcgcaggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatg 780
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||·|||
Db    721 attgtcggcgcaggcgatgccgtgcagggtataagcgaaggctcaaacattgctgtcatg 780

Qy    781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    781 cacggcttgggtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagat 840

Qy    841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    841 atggcgcaactcaaagactatgccgcagcagccatccgcgattgggcagtccaaaacccc 900

Qy    901 aatgccgcacaaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaa 960
          |||||||||||||||||||||||||||||||||||| ||||| ||||||| |||||
Db    901 aatgccgcacaaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaa 960

Qy    961 gggattggagctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaag 1020
          |||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||
Db    961 gggattggagctgtccggggaaaatacggcttgggcggcatcacggcacatcctgtcaag 1020

Qy   1021 cggtcgcagatgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080
          |||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db   1021 cggtcgcagatgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaatttt 1080

Qy   1081 gccgatgcggcatacgccaaatacccgtccccttaccattcccgaaatatccgttcaaac 1140
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1081 gccgatgcggcatacgccaaatacccgtccccttaccattcccgaaatatccgttcaaac 1140

Qy   1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacgga 1200
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1141 ttggagcagcgttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggc 1200

Qy   1201 aagaatgtgaaactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaa 1260
          || ||||| ||||||||| || ||||||||||||||||    || ||||||||||||||||
Db   1201 aaaaatgtcaaactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaa 1260

Qy   1261 gggtttccgaattttgaaaaagacgtaaaatacgatacgagaattaata 1309
          |||||||||||||||| ||  |||| ||||| |||||||   |  |||
Db   1261 gggtttccgaattttgagaagcacgtgaaatatgatacgaagctcgata 1309
```

RESULT 6
AAS43881
ID AAS43881 standard; DNA; 2028 BP.
XX
AC AAS43881;
XX
DT 18-DEC-2001 (first entry)
XX
DE Neisseria meningitidis fusion protein delta-G741-ORF46.1 DNA.
XX
KW Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW Neisserial protein.
XX
OS Neisseria meningitidis.
OS Synthetic.
XX
PN WO200164922-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00452.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Guiliani MM;
PI Pizza M;
XX
DR WPI; 2001-582163/65.
DR P-PSDB; AAU27582.
XX
PT Producing heterologous proteins from Neisseria meningitidis and N.
PT gonorrhoeae -
XX
PS Example 15; Page 53; 119pp; English.
XX
CC The invention relates to methods for the heterologous expression of
CC Neisserial proteins from Neisseria meningitidis and Neisseria
CC gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC leader peptide, and may be replaced by a domain from a different protein
CC to make a fusion protein, in order to enhance heterologous expression of
CC Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC stretch, can be mutated to enhance expression. The proteins used in the
CC processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC and peptide regions of proteins of the invention.
XX
SQ Sequence 2028 BP; 557 A; 577 C; 531 G; 363 T; 0 other;

```
  Query Match           70.4%;  Score 1176.2;  DB 22;  Length 2028;
  Best Local Similarity 97.3%;  Pred. No. 0;
  Matches 1196;  Conservative    0;  Mismatches   33;  Indels    0;  Gaps    0;
```

```
Qy      71 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 130
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     773 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 832

Qy     131 ccgacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcata 190
           |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||
Db     833 ccgacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggccata 892

Qy     191 tcggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggcca 250
           |||||||||||| |||||||||||||||||||||||| | || || ||||||||||
Db     893 tcggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggcca 952

Qy     251 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 310
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     953 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 1012

Qy     311 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 370
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1013 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 1072

Qy     371 tcagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 430
           | ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1073 ttagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 1132

Qy     431 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 490
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1133 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 1192

Qy     491 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 550
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1193 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 1252

Qy     551 ggcttgtcgaccgtttccacaatataccggtagtatgctgacgcaaggagtaggcgacggat 610
           |||||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||
Db    1253 ggcttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggat 1312

Qy     611 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctt 670
           |||||||||||||||||||||||||||||||||||||||||||||||||||||||| |
Db    1313 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagcct 1372

Qy     671 tcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcg 730
           |||||||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db    1373 tcaacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcg 1432

Qy     731 caggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgg 790
           |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    1433 caggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgg 1492

Qy     791 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 850
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1493 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 1552

Qy     851 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 910
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1553 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 1612

Qy     911 aaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggag 970
           |||||||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||
Db    1613 aaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggag 1672

Qy     971 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcaga 1030
           |||||||||||||||||||||||||||||||||||||||| ||||||||||||||||
Db    1673 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcaga 1732

Qy    1031 tgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 1090
           |||||| ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1733 tgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 1792

Qy    1091 catacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagc 1150
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1793 catacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagc 1852

Qy    1151 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtga 1210
           |||||||||||||||||||||||||||||||||||||||||||||||| || ||||| |
Db    1853 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtca 1912

Qy    1211 aactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccga 1270
           |||||||| || |||||||||||||||    || ||||||||||||||||||||||||||
Db    1913 aactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccga 1972

Qy    1271 attttgaaaaagacgtaaaatacgatacg 1299
           ||||||| ||  |||| ||||| ||||||
Db    1973 attttgagaagcacgtgaaatatgatacg 2001
```

RESULT 7
AAD17046
ID AAD17046 standard; DNA; 2028 BP.
XX
AC AAD17046;
XX
DT 29-NOV-2001 (first entry)
XX
DE N. meningitidis strain 2996 delta G741-ORF46.1 fusion DNA.
XX
KW Heterologous expression; Neisserial protein; open reading frame; ORF;
KW delta G741-ORF46.1 fusion protein; ds.
XX
OS Neisseria meningitidis 2996.
XX

FH	Key	Location/Qualifiers
FT	CDS	1..2028
FT		/*tag= a
FT		/product= "N. meningitidis strain 2996 delta
FT		G741-ORF46.1 fusion protein"

XX
PN WO200164920-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00420.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Giuliani MM;
PI Pizza M;
XX
DR WPI; 2001-557776/62.
DR P-PSDB; AAE10031.
XX
PT Heterologous expression for the expression of two or more Neisserial
PT proteins in fused state -
XX
PS Example 4; Page 21-22; 52pp; English.
XX
CC The present invention relates to a method for simultaneous heterologous
CC expression of two or more Neisserial proteins which are in a fused
CC state. The method is useful for simultaneous heterologous expression of
CC two or more Neisserial proteins. A protein that may be unstable or
CC poorly expressed on its own is assisted by adding a suitable hybrid
CC partner and commercial manufacture is simplified-only one expression and
CC purification need to be employed in order to produce two separately-
CC useful proteins. The present sequence is a DNA encoding
CC Neisseria meningitidis (serogroup B, strain 2996) delta G741-ORF46.1
CC (open reading frame) fusion protein.
XX
SQ Sequence 2028 BP; 557 A; 577 C; 531 G; 363 T; 0 other;

Query Match 70.4%; Score 1176.2; DB 22; Length 2028;
Best Local Similarity 97.3%; Pred. No. 0;
Matches 1196; Conservative 0; Mismatches 33; Indels 0; Gaps 0;

```
Qy      71 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 130
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     773 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 832

Qy     131 ccgacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcata 190
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     833 ccgacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggccata 892

Qy     191 tcggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggcca 250
           |||||||||||||| |||||||||||||||||||||||| | || || ||||||||||
Db     893 tcggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggcca 952

Qy     251 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 310
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     953 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 1012

Qy     311 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 370
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1013 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 1072

Qy     371 tcagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 430
           | ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1073 ttagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 1132

Qy     431 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 490
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1133 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 1192

Qy     491 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 550
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1193 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 1252

Qy     551 ggcttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggat 610
           |||||| |||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db    1253 ggcttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggat 1312

Qy     611 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctt 670
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |
Db    1313 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagcct 1372

Qy     671 tcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcg 730
           |||||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    1373 tcaacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcg 1432

Qy     731 caggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgg 790
           |||||||||||||||||||| |||||||||||||||||||||||||||||||||||||||||
Db    1433 caggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgg 1492

Qy     791 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 850
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1493 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 1552

Qy     851 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 910
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1553 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 1612

Qy     911 aaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggag 970
           |||||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||
Db    1613 aaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggag 1672

Qy     971 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcaga 1030
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1673 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcaga 1732

Qy    1031 tgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 1090
           |||||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1733 tgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 1792

Qy    1091 catacgccaaatacccgtcccccttaccattcccgaaatatccgttcaaacttggagcagc 1150
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1793 catacgccaaatacccgtcccccttaccattcccgaaatatccgttcaaacttggagcagc 1852

Qy    1151 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtga 1210
           ||||||||||||||||||||||||||||||||||||||||||||||||||| || ||||| |
Db    1853 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtca 1912

Qy    1211 aactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccga 1270
           |||||||| || |||||||||||||||    || ||||||||||||||||||||||||||
Db    1913 aactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccga 1972

Qy    1271 attttgaaaaagacgtaaaatacgatacg 1299
           ||||||| ||  |||| ||||| |||||||
Db    1973 attttgagaagcacgtgaaatatgatacg 2001
```

RESULT 8
AAS43874
ID AAS43874 standard; DNA; 4425 BP.
XX
AC AAS43874;
XX
DT 18-DEC-2001 (first entry)
XX
DE Neisseria meningitidis fusion protein delta-G983-ORF46.1 DNA.
XX
KW Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW Neisserial protein.
XX
OS Neisseria meningitidis.
OS Synthetic.
XX
PN WO200164922-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00452.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Guiliani MM;
PI Pizza M;
XX
DR WPI; 2001-582163/65.
DR P-PSDB; AAU27575.
XX
PT Producing heterologous proteins from Neisseria meningitidis and N.
PT gonorrhoeae -
XX
PS Example 15; Page 42-43; 119pp; English.
XX
CC The invention relates to methods for the heterologous expression of
CC Neisserial proteins from Neisseria meningitidis and Neisseria
CC gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC leader peptide, and may be replaced by a domain from a different protein
CC to make a fusion protein, in order to enhance heterologous expression of
CC Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC stretch, can be mutated to enhance expression. The proteins used in the
CC processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC and peptide regions of proteins of the invention.
XX
SQ Sequence 4425 BP; 1165 A; 1259 C; 1219 G; 782 T; 0 other;

Query Match 70.4%; Score 1176.2; DB 22; Length 4425;
Best Local Similarity 97.3%; Pred. No. 0;
Matches 1196; Conservative 0; Mismatches 33; Indels 0; Gaps 0;

```
Qy      71 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 130
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    3170 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 3229

Qy     131 ccgacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcata 190
```

```
Db   3230 ccgacgggaaatacccacctattcggcagcagggggaacttgccgagcgcagcggccata 3289

Qy    191 tcggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggcca 250
          ||||||||||||| |||||||||||||||||||||||||| | || || ||||||||||
Db   3290 tcggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggcca 3349

Qy    251 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 310
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3350 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 3409

Qy    311 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 370
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3410 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 3469

Qy    371 tcagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 430
          | ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3470 ttagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 3529

Qy    431 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 490
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3530 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 3589

Qy    491 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 550
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3590 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 3649

Qy    551 ggcttgtcgaccgtttccacaatacccggtagtatgctgacgcaaggagtaggcgacggat 610
          |||||| |||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db   3650 ggcttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggat 3709

Qy    611 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctt 670
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |
Db   3710 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagcct 3769

Qy    671 tcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcg 730
          |||||||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db   3770 tcaacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcg 3829

Qy    731 caggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgg 790
          |||||||||||||||||| |||||||||||||||||||||||| ||||||||||||||
Db   3830 caggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgg 3889

Qy    791 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 850
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3890 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 3949

Qy    851 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 910
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3950 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 4009

Qy    911 aaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggag 970
          |||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||
Db   4010 aaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggag 4069

Qy    971 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcaga 1030
          ||||||||||||||||||||||||||||||||||||||||||||| ||||||||||||||
Db   4070 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcaga 4129

Qy   1031 tgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 1090
          |||||| ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   4130 tgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 4189

Qy   1091 catacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagc 1150
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   4190 catacgccaaataccctgtcccttaccattcccgaaatatccgttcaaacttggagcagc 4249

Qy   1151 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtga 1210
          |||||||||||||||||||||||||||||||||||||||||||||| || ||||| |
Db   4250 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtca 4309

Qy   1211 aactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccga 1270
          |||||||| || ||||||||||||||    || ||||||||||||||||||||||||||
Db   4310 aactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccga 4369

Qy   1271 attttgaaaaagacgtaaaatacgatacg 1299
          ||||||| ||  |||| ||||| ||||||
Db   4370 attttgagaagcacgtgaaatatgatacg 4398


RESULT   9
AAD17039
ID   AAD17039 standard; DNA; 4425 BP.
XX
AC   AAD17039;
XX
DT   29-NOV-2001  (first entry)
XX
DE   N. meningitidis strain 2996 delta G983-ORF46.1 fusion DNA.
XX
KW   Heterologous expression; Neisserial protein; open reading frame; ORF;
KW   delta G983-ORF46.1 fusion protein; ds.
XX
OS   Neisseria meningitidis 2996.
XX
FH   Key             Location/Qualifiers
FT   CDS             1..4425
FT                   /*tag=  a
FT                   /product= "N. meningitidis strain 2996 delta
FT                   G983-ORF46.1 fusion protein"
XX
PN   WO200164920-A2.
XX
PD   07-SEP-2001.
XX
PF   28-FEB-2001; 2001WO-IB00420.
XX
PR   28-FEB-2000; 2000GB-0004695.
PR   13-NOV-2000; 2000GB-0027675.
XX
PA   (CHIR-) CHIRON SPA.
XX
PI   Arico MB,  Comanducci M,  Galeotti C,  Masignani V,  Giuliani MM;
PI   Pizza M;
XX
DR   WPI; 2001-557776/62.
DR   P-PSDB; AAE10022.
XX
PT   Heterologous expression for the expression of two or more Neisserial
PT   proteins in fused state  -
XX
PS   Example 3; Page 13-14; 52pp; English.
XX
CC   The present invention relates to a method for simultaneous heterologous
CC   expression of two or more Neisserial proteins which are in a fused
CC   state. The method is useful for simultaneous heterologous expression of
CC   two or more Neisserial proteins. A protein that may be unstable or
CC   poorly expressed on its own is assisted by adding a suitable hybrid
CC   partner and commercial manufacture is simplified-only one expression and
CC   purification need to be employed in order to produce two separately-
CC   useful proteins. The present sequence is a DNA encoding
CC   Neisseria meningitidis (serogroup B, strain 2996) delta G983-ORF46.1
CC   (open reading frame) fusion protein.
XX
SQ   Sequence 4425 BP; 1165 A; 1259 C; 1219 G; 782 T; 0 other;


  Query Match             70.4%;  Score 1176.2;  DB 22;  Length 4425;
  Best Local Similarity   97.3%;  Pred. No. 0;
  Matches 1196;  Conservative    0;  Mismatches   33;  Indels    0;  Gaps    0;

Qy     71 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 130
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   3170 cctcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaac 3229

Qy    131 ccgacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcata 190
```

```
Db   3230 ccgacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggccata 3289

Qy    191 tcggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggcca 250

Db   3290 tcggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggcca 3349

Qy    251 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 310

Db   3350 ttaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccc 3409

Qy    311 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 370

Db   3410 ccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggat 3469

Qy    371 tcagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 430

Db   3470 ttagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacg 3529

Qy    431 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 490

Db   3530 ggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgaca 3589

Qy    491 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 550

Db   3590 taaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaac 3649

Qy    551 ggcttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggat 610

Db   3650 ggcttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggat 3709

Qy    611 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctt 670

Db   3710 tcaaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagcct 3769

Qy    671 tcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcg 730

Db   3770 tcaacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcg 3829

Qy    731 caggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgg 790

Db   3830 caggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgg 3889

Qy    791 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 850

Db   3890 gtctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaac 3949

Qy    851 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 910

Db   3950 tcaaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcac 4009

Qy    911 aaggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggag 970

Db   4010 aaggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggag 4069

Qy    971 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcaga 1030

Db   4070 ctgttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcaga 4129

Qy   1031 tgggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 1090

Db   4130 tgggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcgg 4189

Qy   1091 catacgccaaatacccgtcccttaccattcccgaaatatccgttcaaacttggagcagc 1150

Db   4190 catacgccaaataccgtcccttaccattcccgaaatatccgttcaaacttggagcagc 4249

Qy   1151 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtga 1210

Db   4250 gttacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtca 4309

Qy   1211 aactggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccga 1270

Db   4310 aactggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccga 4369

Qy   1271 attttgaaaaagacgtaaaatacgatacg 1299

Db   4370 attttgagaagcacgtgaaatatgatacg 4398
```

RESULT 10
AAS43894
ID AAS43894 standard; DNA; 2019 BP.
XX
AC AAS43894;
XX
DT 18-DEC-2001 (first entry)
XX
DE Neisseria meningitidis fusion protein ORF46.1-741 DNA.
XX
KW Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW Neisserial protein.
XX
OS Neisseria meningitidis.
OS Synthetic.
XX
PN WO200164922-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00452.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Guiliani MM;
PI Pizza M;
XX
DR WPI; 2001-582163/65.
DR P-PSDB; AAU27597.
XX
PT Producing heterologous proteins from Neisseria meningitidis and N.
PT gonorrhoeae -
XX
PS Example 23; Page 63-64; 119pp; English.
XX
CC The invention relates to methods for the heterologous expression of
CC Neisserial proteins from Neisseria meningitidis and Neisseria
CC gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC leader peptide, and may be replaced by a domain from a different protein
CC to make a fusion protein, in order to enhance heterologous expression of
CC Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC stretch, can be mutated to enhance expression. The proteins used in the
CC processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC and peptide regions of proteins of the invention.
XX
SQ Sequence 2019 BP; 555 A; 571 C; 531 G; 362 T; 0 other;

Query Match 70.4%; Score 1175.6; DB 22; Length 2019;
Best Local Similarity 97.2%; Pred. No. 0;
Matches 1196; Conservative 0; Mismatches 34; Indels 0; Gaps 0;

```
Qy     73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132

Db      4 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 63

Qy    133 gacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcatatc 192

Db     64 gacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggccatatc 123

Qy    193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
```

```
Db    124 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 183

Qy    253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    184 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 243

Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    244 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 303

Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    304 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 363

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    364 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 423

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    424 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 483

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    484 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 543

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db    544 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 603

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    604 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 663

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
          |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    664 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 723

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    724 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 783

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    784 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 843

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||||||| ||||| ||||||| |||||||||||||||
Db    844 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 903

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||| ||||||||||||||||||||||
Db    904 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 963

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    964 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1023

Qy   1093 tacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1024 tacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagcgt 1083

Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
          |||||||||||||||||||||||||||||||||||||||||| || ||||| |||
Db   1084 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 1143

Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
          |||||| || |||||||||||||||    || ||||||||||||||||||||||||||||
Db   1144 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 1203

Qy   1273 tttgaaaaagacgtaaaatacgatacgaga 1302
          ||||| ||  |||| ||||| |||||| ||
Db   1204 tttgagaagcacgtgaaatatgatacggga 1233
```

RESULT 11
AAD17047
ID AAD17047 standard; DNA; 2019 BP.
XX
AC AAD17047;
XX
DT 29-NOV-2001 (first entry)
XX
DE N. meningitidis strain 2996 ORF46.1-741 fusion DNA.
XX
KW Heterologous expression; Neisserial protein; open reading frame; ORF;
KW ORF46.1-741 fusion protein; ds.
XX
OS Neisseria meningitidis 2996.
XX

FH	Key	Location/Qualifiers
FT	CDS	1..2019
FT		/*tag= a
FT		/product= "N. meningitidis strain 2996 ORF46.1-741
FT		fusion protein"

XX
PN WO200164920-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00420.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Giuliani MM;
PI Pizza M;
XX
DR WPI; 2001-557776/62.
DR P-PSDB; AAE10032.
XX
PT Heterologous expression for the expression of two or more Neisserial
PT proteins in fused state -
XX
PS Example 4; Page 24-25; 52pp; English.
XX
CC The present invention relates to a method for simultaneous heterologous
CC expression of two or more Neisserial proteins which are in a fused
CC state. The method is useful for simultaneous heterologous expression of
CC two or more Neisserial proteins. A protein that may be unstable or
CC poorly expressed on its own is assisted by adding a suitable hybrid
CC partner and commercial manufacture is simplified-only one expression and
CC purification need to be employed in order to produce two separately-
CC useful proteins. The present sequence is a DNA encoding
CC Neisseria meningitidis (serogroup B, strain 2996) ORF46.1 (open
CC reading frame)-741 fusion protein.
XX
SQ Sequence 2019 BP; 555 A; 571 C; 531 G; 362 T; 0 other;

```
  Query Match             70.4%;  Score 1175.6;  DB 22;  Length 2019;
  Best Local Similarity   97.2%;  Pred. No. 0;
  Matches 1196;  Conservative    0;  Mismatches   34;  Indels    0;  Gaps    0;

Qy      73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 63

Qy     133 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggtcatatc 192
           |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db      64 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggccatatc 123

Qy     193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
           |||||||||||| |||||||||||||||||||||||||| | || || ||||||||||||
```

```
Db    124 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 183

Qy    253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    184 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 243

Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    244 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 303

Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    304 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 363

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    364 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 423

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    424 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 483

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    484 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 543

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db    544 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 603

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    604 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 663

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
          |||||||||||||||| |||||||||||||||||||||||||| ||||||||||||||||
Db    664 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 723

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    724 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 783

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    784 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 843

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||||
Db    844 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 903

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||||||| |||||||||||||||||||
Db    904 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 963

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    964 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1023

Qy   1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1024 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1083

Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
          |||||||||||||||||||||||||||||||||||||||||||| || ||||| |||||||
Db   1084 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 1143

Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
          |||||| || ||||||||||||||    || ||||||||||||||||||||||||||||||
Db   1144 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 1203

Qy   1273 tttgaaaaagacgtaaaatacgatacgaga 1302
          ||||| ||  |||| ||||| |||||| ||
Db   1204 tttgagaagcacgtgaaatatgatacggga 1233
```

```
RESULT 12
AAS43896
ID   AAS43896 standard; DNA; 2256 BP.
XX
AC   AAS43896;
XX
DT   18-DEC-2001  (first entry)
XX
DE   Neisseria meningitidis fusion protein ORF46.1-961c DNA.
XX
KW   Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW   Neisserial protein.
XX
OS   Neisseria meningitidis.
OS   Synthetic.
XX
PN   WO200164922-A2.
XX
PD   07-SEP-2001.
XX
PF   28-FEB-2001; 2001WO-IB00452.
XX
PR   28-FEB-2000; 2000GB-0004695.
PR   13-NOV-2000; 2000GB-0027675.
XX
PA   (CHIR-) CHIRON SPA.
XX
PI   Arico MB,  Comanducci M,  Galeotti C,  Masignani V,  Guiliani MM;
PI   Pizza M;
XX
DR   WPI; 2001-582163/65.
DR   P-PSDB; AAU27599.
XX
PT   Producing heterologous proteins from Neisseria meningitidis and N.
PT   gonorrhoeae -
XX
PS   Example 23; Page 65-66; 119pp; English.
XX
CC   The invention relates to methods for the heterologous expression of
CC   Neisserial proteins from Neisseria meningitidis and Neisseria
CC   gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC   leader peptide, and may be replaced by a domain from a different protein
CC   to make a fusion protein, in order to enhance heterologous expression of
CC   Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC   stretch, can be mutated to enhance expression. The proteins used in the
CC   processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC   AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC   and peptide regions of proteins of the invention.
XX
SQ   Sequence 2256 BP; 698 A; 608 C; 545 G; 405 T; 0 other;
```

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  Query Match             70.4%;  Score 1175.6;  DB 22;  Length 2256;
  Best Local Similarity   97.2%;  Pred. No. 0;
  Matches 1196;  Conservative    0;  Mismatches   34;  Indels    0;  Gaps    0;

Qy      73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 63

Qy     133 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggtcatatc 192
           |||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db      64 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggccatatc 123

Qy     193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
           |||||||||| |||||||||||||||||||||||| | || || ||||||||||||
Db     124 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 183

Qy     253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     184 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 243
```

```
Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    244 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 303

Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    304 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 363

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    364 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 423

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    424 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 483

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    484 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 543

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db    544 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 603

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    604 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 663

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
          |||||||||||||||| |||||||||||||||||||||| ||||||||||||||||||||
Db    664 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 723

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    724 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 783

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    784 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 843

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||||
Db    844 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 903

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||| ||||||||||||||||||||
Db    904 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 963

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    964 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1023

Qy   1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1024 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1083

Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
          |||||||||||||||||||||||||||||||||||||||||||| || ||||| |||
Db   1084 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 1143

Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
          |||||| || |||||||||||||||    || ||||||||||||||||||||||||||||
Db   1144 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 1203

Qy   1273 tttgaaaaagacgtaaaatacgatacgaga 1302
          ||||| ||  |||| ||||| |||||| ||
Db   1204 tttgagaagcacgtgaaatatgatacggga 1233
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RESULT 13
AAD17049
ID AAD17049 standard; DNA; 2256 BP.

XX
AC AAD17049;
XX
DT 29-NOV-2001 (first entry)
XX
DE N. meningitidis strain 2996 ORF46.1-961c fusion DNA.
XX
KW Heterologous expression; Neisserial protein; open reading frame; ORF;
KW ORF46.1-961c fusion protein; ds.
XX
OS Neisseria meningitidis 2996.
XX
FH Key Location/Qualifiers
FT CDS 1..2256
FT /*tag= a
FT /product= "N. meningitidis strain 2996 ORF46.1-961c
FT fusion protein"
XX
PN WO200164920-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00420.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Giuliani MM;
PI Pizza M;
XX
DR WPI; 2001-557776/62.
DR P-PSDB; AAE10034.
XX
PT Heterologous expression for the expression of two or more Neisserial
PT proteins in fused state -
XX
PS Example 23; Page 26; 52pp; English.
XX
CC The present invention relates to a method for simultaneous heterologous
CC expression of two or more Neisserial proteins which are in a fused
CC state. The method is useful for simultaneous heterologous expression of
CC two or more Neisserial proteins. A protein that may be unstable or
CC poorly expressed on its own is assisted by adding a suitable hybrid
CC partner and commercial manufacture is simplified-only one expression and
CC purification need to be employed in order to produce two separately-
CC useful proteins. The present sequence is a DNA encoding
CC Neisseria meningitidis (serogroup B, strain 2996) ORF46.1 (open
CC reading frame)-961c fusion protein.
XX
SQ Sequence 2256 BP; 698 A; 608 C; 545 G; 405 T; 0 other;

```
  Query Match           70.4%;  Score 1175.6;  DB 22;  Length 2256;
  Best Local Similarity 97.2%;  Pred. No. 0;
  Matches 1196;  Conservative    0;  Mismatches   34;  Indels    0;  Gaps    0;

Qy      73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       4 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 63

Qy     133 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggtcatatc 192
           |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db      64 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggccatatc 123

Qy     193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
           |||||||||||| |||||||||||||||||||||||| | || || ||||||||||||
Db     124 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 183

Qy     253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     184 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 243
```

```
Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    244 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 303

Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    304 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 363

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    364 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 423

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    424 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 483

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    484 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 543

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db    544 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 603

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    604 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 663

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
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Db    664 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 723

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Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
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Db    784 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 843

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||
Db    844 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 903

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||||
Db    904 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 963

Qy    1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
           |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     964 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1023

Qy    1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
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Db    1024 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1083

Qy    1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
           |||||||||||||||||||||||||||||||||||||||||||| || ||||| |||
Db    1084 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 1143

Qy    1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
           |||||| || |||||||||||||||    || ||||||||||||||||||||||||||||
Db    1144 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 1203

Qy    1273 tttgaaaaagacgtaaaatacgatacgaga 1302
           ||||| ||  |||| ||||| |||||| ||
Db    1204 tttgagaagcacgtgaaatatgatacggga 1233
```

RESULT 14
AAS43895
ID AAS43895 standard; DNA; 2421 BP.

XX
AC AAS43895;
XX
DT 18-DEC-2001 (first entry)
XX
DE Neisseria meningitidis fusion protein ORF46.1-961 DNA.
XX
KW Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW Neisserial protein.
XX
OS Neisseria meningitidis.
OS Synthetic.
XX
PN WO200164922-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00452.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Guiliani MM;
PI Pizza M;
XX
DR WPI; 2001-582163/65.
DR P-PSDB; AAU27598.
XX
PT Producing heterologous proteins from Neisseria meningitidis and N.
PT gonorrhoeae -
XX
PS Example 23; Page 64-65; 119pp; English.
XX
CC The invention relates to methods for the heterologous expression of
CC Neisserial proteins from Neisseria meningitidis and Neisseria
CC gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC leader peptide, and may be replaced by a domain from a different protein
CC to make a fusion protein, in order to enhance heterologous expression of
CC Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC stretch, can be mutated to enhance expression. The proteins used in the
CC processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC and peptide regions of proteins of the invention.
XX
SQ Sequence 2421 BP; 730 A; 659 C; 591 G; 441 T; 0 other;

Query Match 70.4%; Score 1175.6; DB 22; Length 2421;
Best Local Similarity 97.2%; Pred. No. 0;
Matches 1196; Conservative 0; Mismatches 34; Indels 0; Gaps 0;

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Qy      73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
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Qy     133 gacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcatatc 192
           ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
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Qy     193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
           |||||||||| |||||||||||||||||||||||||| | || || ||||||||||||
Db     124 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 183

Qy     253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     184 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 243

Qy     313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     244 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 303
```

```
Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    304 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 363

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    364 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 423

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
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Db    424 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 483

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| |||||||||||||||| ||||||||||||||||||||||||||||||||||||
Db    484 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 543

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
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Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
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Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
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Db    664 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 723

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
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Db    724 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 783

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    784 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 843

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||
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Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          ||||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||
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Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy   1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
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Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
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Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
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Qy   1273 tttgaaaaagacgtaaaatacgatacgaga 1302
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Db   1204 tttgagaagcacgtgaaatatgatacggga 1233
```

RESULT 15
AAD17048
ID AAD17048 standard; DNA; 2421 BP.
XX
AC AAD17048;
XX
DT 29-NOV-2001 (first entry)
XX
DE N. meningitidis strain 2996 ORF46.1-961 fusion DNA.
XX
KW Heterologous expression; Neisserial protein; open reading frame; ORF;
KW ORF46.1-961 fusion protein; ds.
XX
OS Neisseria meningitidis 2996.
XX
FH Key Location/Qualifiers
FT CDS 1..2421
FT /*tag= a
FT /product= "N. meningitidis strain 2996 ORF46.1-961
FT fusion protein"
XX
PN WO200164920-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00420.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Giuliani MM;
PI Pizza M;
XX
DR WPI; 2001-557776/62.
DR P-PSDB; AAE10033.
XX
PT Heterologous expression for the expression of two or more Neisserial
PT proteins in fused state -
XX
PS Example 23; Page 25; 52pp; English.
XX
CC The present invention relates to a method for simultaneous heterologous
CC expression of two or more Neisserial proteins which are in a fused
CC state. The method is useful for simultaneous heterologous expression of
CC two or more Neisserial proteins. A protein that may be unstable or
CC poorly expressed on its own is assisted by adding a suitable hybrid
CC partner and commercial manufacture is simplified-only one expression and
CC purification need to be employed in order to produce two separately-
CC useful proteins. The present sequence is a DNA encoding
CC Neisseria meningitidis (serogroup B, strain 2996) ORF46.1 (open
CC reading frame)-961 fusion protein.
XX
SQ Sequence 2421 BP; 730 A; 659 C; 591 G; 441 T; 0 other;

Query Match 70.4%; Score 1175.6; DB 22; Length 2421;
Best Local Similarity 97.2%; Pred. No. 0;
Matches 1196; Conservative 0; Mismatches 34; Indels 0; Gaps 0;

```
Qy     73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      4 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 63

Qy    133 gacgggaaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcatatc 192
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     64 gacgggaaaataccacctattcggcagcagggggaacttgccgagcgcagcggccatatc 123

Qy    193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
          |||||||||| |||||||||||||||||||||||||| | || || ||||||||||||
Db    124 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 183

Qy    253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
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Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
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Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
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Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    364 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 423

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    484 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 543

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db    544 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 603

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    604 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 663

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
          |||||||||||||||| |||||||||||||||||||||||||| ||||||||||||||||
Db    664 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 723

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    724 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 783

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    784 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 843

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||
Db    844 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 903

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
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Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
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Qy   1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
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Qy   1273 tttgaaaaagacgtaaaatacgatacgaga 1302
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Db   1204 tttgagaagcacgtgaaatatgatacggga 1233
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RESULT 16
AAS43903
ID AAS43903 standard; DNA; 2304 BP.
XX
AC AAS43903;
XX
DT 18-DEC-2001 (first entry)
XX
DE Neisseria meningitidis fusion protein 961cL-ORF46.1 DNA.
XX
KW Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW Neisserial protein.
XX
OS Neisseria meningitidis.
OS Synthetic.
XX
PN WO200164922-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00452.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Guiliani MM;
PI Pizza M;
XX
DR WPI; 2001-582163/65.
DR P-PSDB; AAU27606.
XX
PT Producing heterologous proteins from Neisseria meningitidis and N.
PT gonorrhoeae -
XX
PS Example 23; Page 73-74; 119pp; English.
XX
CC The invention relates to methods for the heterologous expression of
CC Neisserial proteins from Neisseria meningitidis and Neisseria
CC gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC leader peptide, and may be replaced by a domain from a different protein
CC to make a fusion protein, in order to enhance heterologous expression of
CC Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC stretch, can be mutated to enhance expression. The proteins used in the
CC processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC and peptide regions of proteins of the invention.
XX
SQ Sequence 2304 BP; 710 A; 619 C; 555 G; 420 T; 0 other;

Query Match 70.3%; Score 1174.4; DB 22; Length 2304;
Best Local Similarity 97.1%; Pred. No. 0;
Matches 1196; Conservative 0; Mismatches 36; Indels 0; Gaps 0;

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Qy     73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
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Qy    133 gacgggaaataccacctattcggcagcagggggggaacttgccgagcgcagcggtcatatc 192
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Db   1129 gacgggaaataccacctattcggcagcagggggggaacttgccgagcgcagcggccatatc 1188

Qy    193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
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Db   1189 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 1248

Qy    253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1249 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 1308

Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1309 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 1368

Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
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Db   1369 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 1428

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
```

```
Db   1429 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 1488

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1489 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 1548

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db   1549 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 1608

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db   1609 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 1668

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
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Db   1669 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 1728

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Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1789 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 1848

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1849 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 1908

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||
Db   1909 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 1968

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||||
Db   1969 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 2028

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| |||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   2029 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 2088

Qy   1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
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Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
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Qy   1273 tttgaaaaagacgtaaaatacgatacgagaat 1304
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Db   2269 tttgagaagcacgtgaaatatgatacgtaact 2300
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RESULT 17
AAD17056
ID AAD17056 standard; DNA; 2304 BP.
XX
AC AAD17056;
XX
DT 29-NOV-2001 (first entry)
XX
DE N. meningitidis strain 2996 961cL-ORF46.1 fusion DNA.
XX
KW Heterologous expression; Neisserial protein; open reading frame; ORF;
KW 961cL-ORF46.1 fusion protein; ds.
XX
OS Neisseria meningitidis 2996.
XX
FH Key Location/Qualifiers
FT CDS 1..2298
FT /*tag= a
FT /product= "N. meningitidis strain 2996
FT 961cL-ORF46.1 fusion protein"
XX
PN WO200164920-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00420.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Giuliani MM;
PI Pizza M;
XX
DR WPI; 2001-557776/62.
DR P-PSDB; AAE10041.
XX
PT Heterologous expression for the expression of two or more Neisserial
PT proteins in fused state -
XX
PS Example 23; Page 32; 52pp; English.
XX
CC The present invention relates to a method for simultaneous heterologous
CC expression of two or more Neisserial proteins which are in a fused
CC state. The method is useful for simultaneous heterologous expression of
CC two or more Neisserial proteins. A protein that may be unstable or
CC poorly expressed on its own is assisted by adding a suitable hybrid
CC partner and commercial manufacture is simplified-only one expression and
CC purification need to be employed in order to produce two separately-
CC useful proteins. The present sequence is a DNA encoding
CC Neisseria meningitidis (serogroup B, strain 2996) 961cL-ORF46.1
CC (open reading frame) fusion protein.
XX
SQ Sequence 2304 BP; 710 A; 619 C; 555 G; 420 T; 0 other;

Query Match 70.3%; Score 1174.4; DB 22; Length 2304;
Best Local Similarity 97.1%; Pred. No. 0;
Matches 1196; Conservative 0; Mismatches 36; Indels 0; Gaps 0;

```
Qy     73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1069 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 1128

Qy    133 gacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcatatc 192
          ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db   1129 gacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggccatatc 1188

Qy    193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
          |||||||||||| |||||||||||||||||||||||||||| | || || ||||||||||||
Db   1189 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 1248

Qy    253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1249 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 1308

Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1309 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 1368

Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1369 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 1428

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
```

```
Db   1429 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 1488

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1489 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 1548

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db   1549 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 1608

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          ||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||
Db   1609 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 1668

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db   1669 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 1728

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
          |||||||||||||||| |||||||||||||||||||||||||||| ||||||||||||||
Db   1729 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 1788

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1789 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 1848

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1849 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 1908

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||
Db   1909 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 1968

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||
Db   1969 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 2028

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   2029 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 2088

Qy   1093 tacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   2089 tacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagcgt 2148

Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
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Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
          |||||| || ||||||||||||||||    || ||||||||||||||||||||||||||||
Db   2209 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 2268

Qy   1273 tttgaaaaagacgtaaaatacgatacgagaat 1304
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Db   2269 tttgagaagcacgtgaaatatgatacgtaact 2300
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RESULT 18
AAS43900
ID   AAS43900 standard; DNA; 2256 BP.
XX
AC   AAS43900;
XX
DT   18-DEC-2001  (first entry)
XX
DE   Neisseria meningitidis fusion protein 961c-ORF46.1 DNA.
XX
KW   Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW   Neisserial protein.
XX
OS   Neisseria meningitidis.
OS   Synthetic.
XX
PN   WO200164922-A2.
XX
PD   07-SEP-2001.
XX
PF   28-FEB-2001; 2001WO-IB00452.
XX
PR   28-FEB-2000; 2000GB-0004695.
PR   13-NOV-2000; 2000GB-0027675.
XX
PA   (CHIR-) CHIRON SPA.
XX
PI   Arico MB,  Comanducci M,  Galeotti C,  Masignani V,  Guiliani MM;
PI   Pizza M;
XX
DR   WPI; 2001-582163/65.
DR   P-PSDB; AAU27603.
XX
PT   Producing heterologous proteins from Neisseria meningitidis and N.
PT   gonorrhoeae -
XX
PS   Example 23; Page 70; 119pp; English.
XX
CC   The invention relates to methods for the heterologous expression of
CC   Neisserial proteins from Neisseria meningitidis and Neisseria
CC   gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC   leader peptide, and may be replaced by a domain from a different protein
CC   to make a fusion protein, in order to enhance heterologous expression of
CC   Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC   stretch, can be mutated to enhance expression. The proteins used in the
CC   processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC   AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC   and peptide regions of proteins of the invention.
XX
SQ   Sequence 2256 BP; 698 A; 608 C; 545 G; 405 T; 0 other;
```

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  Query Match           70.3%;  Score 1174.2;  DB 22;  Length 2256;
  Best Local Similarity 97.3%;  Pred. No. 0;
  Matches 1194;  Conservative    0;  Mismatches   33;  Indels    0;  Gaps    0;

Qy      73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
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Db    1003 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 1062

Qy     133 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggtcatatc 192
           |||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db    1063 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggccatatc 1122

Qy     193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
           |||||||||| |||||||||||||||||||||||||||| | || || ||||||||||||
Db    1123 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 1182

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Db    1183 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 1242

Qy     313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1243 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 1302

Qy     373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1303 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 1362

Qy     433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1363 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 1422

Qy     493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db   1423 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 1482

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          |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db   1483 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 1542

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
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Db   1543 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 1602

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
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Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
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Db   1663 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 1722

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1723 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 1782

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
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Db   1783 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 1842

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||
Db   1843 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 1902

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||||
Db   1903 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 1962

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1963 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 2022

Qy   1093 tacgccaaatacccgtcccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   2023 tacgccaaatacccgtcccccttaccattcccgaaatatccgttcaaacttggagcagcgt 2082

Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
          |||||||||||||||||||||||||||||||||||||||||||||| || ||||| |||
Db   2083 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 2142

Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
          |||||| || |||||||||||||||    || ||||||||||||||||||||||||||||
Db   2143 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 2202

Qy   1273 tttgaaaaagacgtaaaatacgatacg 1299
          ||||| ||  |||| ||||| ||||||
Db   2203 tttgagaagcacgtgaaatatgatacg 2229


RESULT 19
AAD17053
ID   AAD17053 standard; DNA; 2256 BP.
XX
AC   AAD17053;
XX
DT   29-NOV-2001  (first entry)
XX
DE   N. meningitidis strain 2996 961c-ORF46.1 fusion DNA.
XX
KW   Heterologous expression; Neisserial protein; open reading frame; ORF;
KW   961c-ORF46.1 fusion protein; ds.
XX
OS   Neisseria meningitidis 2996.
XX
FH   Key             Location/Qualifiers
FT   CDS             1..2256
FT                   /*tag=  a
FT                   /product= "N. meningitidis strain 2996 961c-ORF46.1
FT                   fusion protein"
XX
PN   WO200164920-A2.
XX
PD   07-SEP-2001.
XX
PF   28-FEB-2001; 2001WO-IB00420.
XX
PR   28-FEB-2000; 2000GB-0004695.
PR   13-NOV-2000; 2000GB-0027675.
XX
PA   (CHIR-) CHIRON SPA.
XX
PI   Arico MB,  Comanducci M,  Galeotti C,  Masignani V,  Giuliani MM;
PI   Pizza M;
XX
DR   WPI; 2001-557776/62.
DR   P-PSDB; AAE10038.
XX
PT   Heterologous expression for the expression of two or more Neisserial
PT   proteins in fused state  -
XX
PS   Example 23; Page 29-30; 52pp; English.
XX
CC   The present invention relates to a method for simultaneous heterologous
CC   expression of two or more Neisserial proteins which are in a fused
CC   state. The method is useful for simultaneous heterologous expression of
CC   two or more Neisserial proteins. A protein that may be unstable or
CC   poorly expressed on its own is assisted by adding a suitable hybrid
CC   partner and commercial manufacture is simplified-only one expression and
CC   purification need to be employed in order to produce two separately-
CC   useful proteins. The present sequence is a DNA encoding
CC   Neisseria meningitidis (serogroup B, strain 2996) 961c-ORF46.1
CC   (open reading frame) fusion protein.
XX
SQ   Sequence 2256 BP; 698 A; 608 C; 545 G; 405 T; 0 other;


  Query Match             70.3%;  Score 1174.2;  DB 22;  Length 2256;
  Best Local Similarity   97.3%;  Pred. No. 0;
  Matches 1194;  Conservative    0;  Mismatches   33;  Indels    0;  Gaps    0;

Qy      73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1003 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 1062

Qy     133 gacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggtcatatc 192
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db    1063 gacgggaaataccacctattcggcagcagggggaacttgccgagcgcagcggccatatc 1122

Qy     193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
           |||||||||| |||||||||||||||||||||||||| | || || ||||||||||||
Db    1123 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 1182

Qy     253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1183 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 1242

Qy     313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1243 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 1302

Qy     373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1303 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 1362

Qy     433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1363 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 1422

Qy     493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db   1423 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 1482

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| |||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db   1483 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 1542

Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db   1543 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 1602

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db   1603 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 1662

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
          |||||||||||||||| |||||||||||||||||||||||||| ||||||||||||||||
Db   1663 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 1722

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1723 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 1782

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1783 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 1842

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||
Db   1843 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 1902

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||||| ||||||||||||||||||
Db   1903 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 1962

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1963 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 2022

Qy   1093 tacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   2023 tacgccaaatacccgtcccctaccattcccgaaatatccgttcaaacttggagcagcgt 2082

Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
          |||||||||||||||||||||||||||||||||||||||||||||| || ||||| |||
Db   2083 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 2142

Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
          |||||| || |||||||||||||||    || ||||||||||||||||||||||||||||
Db   2143 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 2202

Qy   1273 tttgaaaaagacgtaaaatacgatacg 1299
          ||||| ||  |||| ||||| ||||||
Db   2203 tttgagaagcacgtgaaatatgatacg 2229
```

RESULT 20
AAS43897
ID AAS43897 standard; DNA; 2421 BP.
XX
AC AAS43897;
XX
DT 18-DEC-2001 (first entry)
XX
DE Neisseria meningitidis fusion protein 961-ORF46.1 DNA.
XX
KW Neisseria gonorrhoeae; leader peptide; fusion protein; ORF46.1; ds;
KW Neisserial protein.
XX
OS Neisseria meningitidis.
OS Synthetic.
XX
PN WO200164922-A2.
XX
PD 07-SEP-2001.
XX
PF 28-FEB-2001; 2001WO-IB00452.
XX
PR 28-FEB-2000; 2000GB-0004695.
PR 13-NOV-2000; 2000GB-0027675.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Arico MB, Comanducci M, Galeotti C, Masignani V, Guiliani MM;
PI Pizza M;
XX
DR WPI; 2001-582163/65.
DR P-PSDB; AAU27600.
XX
PT Producing heterologous proteins from Neisseria meningitidis and N.
PT gonorrhoeae -
XX
PS Example 23; Page 66-67; 119pp; English.
XX
CC The invention relates to methods for the heterologous expression of
CC Neisserial proteins from Neisseria meningitidis and Neisseria
CC gonorrhoeae. At least one domain in the protein is deleted, e.g. the
CC leader peptide, and may be replaced by a domain from a different protein
CC to make a fusion protein, in order to enhance heterologous expression of
CC Neisserial proteins. Also, a region of a protein, such as a poly-glycine
CC stretch, can be mutated to enhance expression. The proteins used in the
CC processes include ORF46.1, 287, 741, 919, 953, 961 and 983. Sequences
CC AAS43868-AAS43905 represent DNA molecules encoding Neisserial proteins
CC and peptide regions of proteins of the invention.
XX
SQ Sequence 2421 BP; 730 A; 659 C; 591 G; 441 T; 0 other;

Query Match 70.3%; Score 1174.2; DB 22; Length 2421;
Best Local Similarity 97.3%; Pred. No. 0;
Matches 1194; Conservative 0; Mismatches 33; Indels 0; Gaps 0;

```
Qy     73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1168 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 1227

Qy    133 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggtcatatc 192
          |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db   1228 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggccatatc 1287

Qy    193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
          |||||||||||| |||||||||||||||||||||||||| | || || ||||||||||||
Db   1288 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 1347

Qy    253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1348 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 1407

Qy    313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1408 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 1467

Qy    373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1468 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 1527

Qy    433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 492
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1528 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctacgacata 1587

Qy    493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1588 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 1647

Qy    553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
          |||| |||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db   1648 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 1707
```

```
Qy     613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db    1708 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 1767

Qy     673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
           |||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||
Db    1768 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 1827

Qy     733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
           |||||||||||||||| |||||||||||||||||||||| ||||||||||||||||||||
Db    1828 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 1887

Qy     793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1888 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 1947

Qy     853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1948 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 2007

Qy     913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
           |||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||
Db    2008 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 2067

Qy     973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
           ||||||||||||||||||||||||||||||||||||||||| |||||||||||||||||||
Db    2068 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 2127

Qy    1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
           |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    2128 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 2187

Qy    1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    2188 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 2247

Qy    1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
           |||||||||||||||||||||||||||||||||||||||||||| || |||||| |||||
Db    2248 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 2307

Qy    1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
           |||||| || |||||||||||||||    || ||||||||||||||||||||||||||||||
Db    2308 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 2367

Qy    1273 tttgaaaaagacgtaaaatacgatacg 1299
           ||||| ||  |||| ||||| ||||||
Db    2368 tttgagaagcacgtgaaatatgatacg 2394
```

```
RESULT 21
AAD17050
ID   AAD17050 standard; DNA; 2421 BP.
XX
AC   AAD17050;
XX
DT   29-NOV-2001  (first entry)
XX
DE   N. meningitidis strain 2996 961-ORF46.1 fusion DNA.
XX
KW   Heterologous expression; Neisserial protein; open reading frame; ORF;
KW   961-ORF46.1 fusion protein; ds.
XX
OS   Neisseria meningitidis 2996.
XX
FH   Key             Location/Qualifiers
FT   CDS             1..2421
FT                   /*tag=  a
FT                   /product= "N. meningitidis strain 2996 961-ORF46.1
FT                   fusion protein"
XX
PN   WO200164920-A2.
XX
PD   07-SEP-2001.
XX
PF   28-FEB-2001; 2001WO-IB00420.
XX
PR   28-FEB-2000; 2000GB-0004695.
PR   13-NOV-2000; 2000GB-0027675.
XX
PA   (CHIR-) CHIRON SPA.
XX
PI   Arico MB,  Comanducci M,  Galeotti C,  Masignani V,  Giuliani MM;
PI   Pizza M;
XX
DR   WPI; 2001-557776/62.
DR   P-PSDB; AAE10035.
XX
PT   Heterologous expression for the expression of two or more Neisserial
PT   proteins in fused state  -
XX
PS   Example 23; Page 27; 52pp; English.
XX
CC   The present invention relates to a method for simultaneous heterologous
CC   expression of two or more Neisserial proteins which are in a fused
CC   state. The method is useful for simultaneous heterologous expression of
CC   two or more Neisserial proteins. A protein that may be unstable or
CC   poorly expressed on its own is assisted by adding a suitable hybrid
CC   partner and commercial manufacture is simplified-only one expression and
CC   purification need to be employed in order to produce two separately-
CC   useful proteins. The present sequence is a DNA encoding
CC   Neisseria meningitidis (serogroup B, strain 2996) 961-ORF46.1
CC   (open reading frame) fusion protein.
XX
SQ   Sequence 2421 BP; 730 A; 659 C; 591 G; 441 T; 0 other;
```

```
  Query Match             70.3%;  Score 1174.2;  DB 22;  Length 2421;
  Best Local Similarity   97.3%;  Pred. No. 0;
  Matches 1194;  Conservative    0;  Mismatches   33;  Indels    0;  Gaps    0;

Qy      73 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 132
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1168 tcagatttggcaaacgattcttttatccggcaggttctcgaccgtcagcatttcgaaccc 1227

Qy     133 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggtcatatc 192
           |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db    1228 gacgggaaataccacctattcggcagcaggggggaacttgccgagcgcagcggccatatc 1287

Qy     193 ggattgggaaacatacaaagccatcagttgggcaacctgttcatccagcaggcggccatt 252
           |||||||||||| |||||||||||||||||||||||| | || || ||||||||||||
Db    1288 ggattgggaaaaatacaaagccatcagttgggcaacctgatgattcaacaggcggccatt 1347

Qy     253 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 312
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1348 aaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtccattccccc 1407

Qy     313 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattc 372
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1408 ttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttgacggattt 1467

Qy     373 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 432
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1468 agcctttaccgcatccattgggacggatacgaacaccatcccgccgacggctatgacggg 1527

Qy     433 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctactgacata 492
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1528 ccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagctactgacata 1587

Qy     493 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 552
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1588 aaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccggacaacgg 1647

Qy     553 cttgtcgaccgtttccacaataccggtagtatgctgacgcaaggagtaggcgacggattc 612
           |||| ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db    1648 cttgccgaccgtttccacaatgccggtagtatgctgacgcaaggagtaggcgacggattc 1707
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Qy    613 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagctttc 672
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |||
Db   1708 aaacgcgccacccgatacagccccgagctggacagatcgggcaatgccgccgaagccttc 1767

Qy    673 aacggcactgcagatatcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgca 732
          |||||||||||||||||||| ||||||||||||||||||||||||||||||||||||||||
Db   1768 aacggcactgcagatatcgttaaaaacatcatcggcgcggcaggagaaattgtcggcgca 1827

Qy    733 ggcgatgccgtgcagggtataagcgaaggctcaaacattgctgttatgcacggcttgggt 792
          |||||||||||||||| |||||||||||||||||||||||||||| ||||||||||||||
Db   1828 ggcgatgccgtgcagggcataagcgaaggctcaaacattgctgtcatgcacggcttgggt 1887

Qy    793 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 852
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1888 ctgctttccaccgaaaacaagatggcgcgcatcaacgatttggcagatatggcgcaactc 1947

Qy    853 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 912
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1948 aaagactatgccgcagcagccatccgcgattgggcagtccaaaaccccaatgccgcacaa 2007

Qy    913 ggcatagaagccgtcagcaatatctttacggcagtcatccccgtcaaagggattggagct 972
          |||||||||||||||||||||||||||| ||||| ||||||| ||||||||||||||||||
Db   2008 ggcatagaagccgtcagcaatatctttatggcagccatccccatcaaagggattggagct 2067

Qy    973 gttcggggaaaatacggcttgggcggcatcacggcacatcctgtcaagcggtcgcagatg 1032
          |||||||||||||||||||||||||||||||||||||||| ||||||||||||||||||||
Db   2068 gttcggggaaaatacggcttgggcggcatcacggcacatcctatcaagcggtcgcagatg 2127

Qy   1033 ggcgagatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 1092
          |||| ||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   2128 ggcgcgatcgcattgccgaaagggaaatccgccgtcagcgacaattttgccgatgcggca 2187

Qy   1093 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 1152
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   2188 tacgccaaatacccgtccccttaccattcccgaaatatccgttcaaacttggagcagcgt 2247

Qy   1153 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggaaagaatgtgaaa 1212
          |||||||||||||||||||||||||||||||||||||||||||||| || ||||| |||
Db   2248 tacggcaaagaaaacatcacctcctcaaccgtgccgccgtcaaacggcaaaaatgtcaaa 2307

Qy   1213 ctggcaaacaaacgccacccgaagaccaaagtgccgtttgacggtaaagggtttccgaat 1272
          |||||| || ||||||||||||||    || ||||||||||||||||||||||||||||||
Db   2308 ctggcagaccaacgccacccgaagacaggcgtaccgtttgacggtaaagggtttccgaat 2367

Qy   1273 tttgaaaaagacgtaaaatacgatacg 1299
          ||||| || |||| ||||| ||||||
Db   2368 tttgagaagcacgtgaaatatgatacg 2394
```

RESULT 22
AAA81504/c
ID AAA81504 standard; DNA; 684 BP.
XX
AC AAA81504;
XX
DT 04-DEC-2000 (first entry)
XX
DE N. meningitidis partial DNA sequence gnm_51 SEQ ID NO:51.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
KW antigen; vaccine; diagnosis; infection; antibacterial; identification;
KW Meningococcus B; MenB; ds.
XX
OS Neisseria meningitidis.
XX
PN WO200022430-A2.
XX
PD 20-APR-2000.
XX
PF 08-OCT-1999; 99WO-US23573.
XX
PR 09-OCT-1998; 98US-0103794.
PR 30-APR-1999; 99US-0132068.
XX
PA (CHIR) CHIRON CORP.
XX
PI Frazer CM, Hickey E, Peterson J, Tettelin H, Venter JC;
PI Masignani V, Galeotti C, Mora M, Ratti G, Scarselli M, Scarlato V;
PI Rappuoli R, Pizza M;
XX
DR WPI; 2000-318079/27.
XX
PT Isolated nucleotide sequences of Neisseria meningitidis which can be
PT used in the diagnosis and treatment of N. meningitidis infection and
PT other Neisserial infections, for example, N.gonorrhoea -
XX
PS Claim 7; Page 1351; 1760pp; English.
XX
CC The present invention describes methods of obtaining immunogenic
CC proteins from Neisseria genomic sequences. AAA81453 to AAA82414
CC represent specifically claimed Neisseria meningitidis genomic DNA
CC sequences; AAA81260 to AAA81303 and AAB25620 to AAB25663 represent
CC Neisseria DNA sequences and their corresponding proteins; AAA81254 to
CC AAA81259 and AAA81304 to AAA81321 represent PCR primers used in the
CC isolation of Neisseria meningitidis DNA sequences; and AAA81322 to
CC AAA81452 represent Neisseria meningitidis MenB polynucleotide ORF
CC sequences, which are all used in the exemplification of the present
CC invention. The nucleic acid sequences, protein sequences, and antibodies
CC against them, can be used in the manufacture of a composition. The
CC composition can be used as a medicament (or in the manufacture of a
CC medicament) for treating, preventing or diagnosing infection due to
CC Neisserial bacteria. For example, some of the identified proteins could
CC be components of vaccines against Meningococcus B; against all serotypes;
CC and/or against all pathogenic Neissariae. Identification of sequences
CC from the bacterium will also facilitate production of biological probes,
CC particularly organism-specific probes. Attempts to make efficacious
CC Meningococcus B vaccines have failed mainly due to antigen tolerance.
CC Multivalent vaccines have also been tried but none have successfully
CC overcome antigenic variability. The provision of further, complete
CC sequences may provide an opportunity to identify secreted or surface
CC exposed proteins that may be presumed targets for the immune system and
CC which are not antigenically variable or at least more conserved than
CC other more variable regions.
XX
SQ Sequence 684 BP; 129 A; 175 C; 203 G; 176 T; 1 other;

Query Match 39.1%; Score 654; DB 21; Length 684;
Best Local Similarity 98.1%; Pred. No. 5.3e-192;
Matches 671; Conservative 1; Mismatches 11; Indels 1; Gaps 1;

```
Qy     43 gcagtgtgcctgccgatgcatgcacacgcctcagatttggcaaacgattcttttatccgg 102
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    684 GCAGTGTGCCTGCCGATGCATGCACACGCCTCAGATTTGGCAAACGATTCTTTTATCCGG 625

Qy    103 caggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcggcagcagg 162
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    624 CAGGTTCTCGACCGTCAGCATTTCGAACCCGACGGGAAATACCACCTATTCGGCAGCAGG 565

Qy    163 ggggaacttgccgagcgcag-cggtcatatcggattgggaaacatacaaagccatcagtt 221
          |||||||||||||||||||| |||:||||||||||||||| ||||||||||||||||||
Db    564 GGGGAACTTGCCGAGCGCAGTCGGYCATATCGGATTGGGAAAAATACAAAGCCATCAGTT 505

Qy    222 gggcaacctgttcatccagcaggcggccattaaaggaaatatcggctacattgtccgctt 281
          |||||||||| | || || ||||||||||||||||||||||||||||||||||||||||||
Db    504 GGGCAACCTGATGATTCAACAGGCGGCCATTAAAGGAAATATCGGCTACATTGTCCGCTT 445

Qy    282 ttccgatcacgggcacgaagtccattccccccttcgacaaccatgcctcacattccgattc 341
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    444 TTCCGATCACGGGCACGAAGTCCATTCCCCCTTCGACAACCATGCCTCACATTCCGATTC 385

Qy    342 tgatgaagccggtagtcccgttgacggattcagcctttaccgcatccattgggacggata 401
          |||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||||
Db    384 TGATGAAGCCGGTAGTCCCGTTGACGGATTTAGCCTTTACCGCATCCATTGGGACGGATA 325
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Qy    402 cgaacaccatcccgccgacggctatgacgggccacagggcggcggctatcccgctcccaa 461
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    324 CGAACACCATCCCGCCGACGGCTATGACGGGCCACAGGGCGGCGGCTATCCCGCTCCCAA 265

Qy    462 aggcgcgagggatatatacagctacgacataaaaggcgttgcccaaaatatccgcctcaa 521
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    264 AGGCGCGAGGGATATATACAGCTACGACATAAAAGGCGTTGCCCAAAATATCCGCCTCAA 205

Qy    522 cctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttccacaaataccggtag 581
          ||||||||||||||||||||||||||||||||||| |||||||||||||| |||||||
Db    204 CCTGACCGACAACCGCAGCACCGGACAACGGCTTGCCGACCGTTTCCACAATGCCGGTAG 145

Qy    582 tatgctgacgcaaggagtaggcgacggattcaaacgcgccacccgatacagccccgagct 641
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    144 TATGCTGACGCAAGGAGTAGGCGACGGATTCAAACGCGCCACCCGATACAGCCCCGAGCT 85

Qy    642 ggacagatcgggcaatgccgccgaagctttcaacggcactgcagatatcgtcaaaaacat 701
          ||||||||||||||||||||||||||| |||||||||||||||||||| ||||||||
Db     84 GGACAGATCGGGCAATGCCGCCGAAGCCTTCAACGGCACTGCAGATATCGTTAAAAACAT 25

Qy    702 catcggcgcggcaggagaaattgt 725
          |||||||||| ||||||||||||||
Db     24 CATCGGCGCTGCAGGAGAAATTGT 1
```

RESULT 23
AAZ12172
ID AAZ12172 standard; DNA; 683 BP.
XX
AC AAZ12172;
XX
DT 08-OCT-1999 (first entry)
XX
DE Neisseria meningitidis partial ORF46 sequence.
XX
KW Neisseria meningitidis; Neisseria gonorrhoeae; antigen; vaccine;
KW treatment; Neisseria infection; meningitis; septicaemia; gonorrhea; ss.
XX
OS Neisseria meningitidis.
XX
PN WO9924578-A2.
XX
PD 20-MAY-1999.
XX
PF 09-OCT-1998; 98WO-IB01665.
XX
PR 01-SEP-1998; 98GB-0019016.
PR 06-NOV-1997; 97GB-0023516.
PR 14-NOV-1997; 97GB-0024190.
PR 18-NOV-1997; 97GB-0024386.
PR 27-NOV-1997; 97GB-0025158.
PR 10-DEC-1997; 97GB-0026147.
PR 14-JAN-1998; 98GB-0000759.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Grandi G, Masignani V, Pizza M, Rappuoli R, Scarlato V;
XX
DR WPI; 1999-327407/27.
DR P-PSDB; AAY38728.
XX
PT Proteins from Neisseria meningitidis and N. gonorrhoeae useful for
PT diagnosis, treatment and prevention of infection
XX
PS Claim 9; Page 273-274; 524pp; English.
XX
CC Nucleotide sequences AAZ11972-Z12358 represent open reading frames
CC (ORFs) of Neisseria meningitidis and N. gonorrhoeae which encode
CC antigenic proteins (see AAY38499-Y38944). The antigenic proteins, their
CC fragments, their nucleic acids and antibodies are used for diagnosis,
CC prevention (as vaccines) or treatment of Neisseria infections,
CC such as meningitis, septicaemia and gonorrhea. Both organisms
CC are closely related. Fragments of the nucleic acids are useful
CC as hybridisation probes and antisense reagents.
XX
SQ Sequence 683 BP; 176 A; 202 C; 171 G; 131 T; 3 other;

Query Match 39.1%; Score 653.4; DB 20; Length 683;
Best Local Similarity 97.1%; Pred. No. 8.1e-192;
Matches 663; Conservative 1; Mismatches 19; Indels 0; Gaps 0;

```
Qy     43 gcagtgtgcctgccgatgcatgcacacgcctcagatttggcaaacgattcttttatccgg 102
          |||||||||| ||||||||||||||||||||| ||||||||||||||||||||||||||
Db      1 gcagtgtgcctnccgatgcatgcacacgcctcanatttggcaaacgattcttttatccgg 60

Qy    103 caggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcggcagcagg 162
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     61 caggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcggcagcagg 120

Qy    163 ggggaacttgccgagcgcagcggtcatatcggattgggaaacatacaaagccatcagttg 222
          |||||||||||||||||     |||||||||||||||| ||||||||||||||||||||
Db    121 ggggaacttgccgagcgccagtctcatatcggattgggaaaaatacaaagccatcagttg 180

Qy    223 ggcaacctgttcatccagcaggcggccattaaaggaaaatatcggctacattgtccgcttt 282
          ||||||||| | || || ||||||||||||||||||||||||||||||||||||||||||
Db    181 ggcaacctgatgattcaacaggcggccattaaaggaaatatcggctacattgtccgcttt 240

Qy    283 tccgatcacgggcacgaagtccattccccctcgacaaccatgcctcacattccgattct 342
          ||||||||||||||||||||||||||||||:||||||||||||||||||||||||||||
Db    241 tccgatcacgggcacgaagtccattccccsttcgacaaccatgcctcacattccgattct 300

Qy    343 gatgaagccggtagtcccgttgacggattcagcctttaccgcatccattgggacggatac 402
          |||||||||||||||||||||||||||||| ||||||||||||||||||||||||||||
Db    301 gatgaagccggtagtcccgttgacggatttagcctttaccgcatccattgggacggatac 360

Qy    403 gaacaccatcccgccgacggctatgacgggccacagggcggcggctatcccgctcccaaa 462
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    361 gaacaccatcccgccgacggctatgacgggccacagggcggcggctatcccgctcccaaa 420

Qy    463 ggcgcgagggatatatacagctacgacataaaaggcgttgcccaaaatatccgcctcaac 522
          |||||||||||||||||||| ||||||||||||||||||||||||||||||||||||||
Db    421 ggcgcgagggatatatacagttacgacataaaaggcgttgcccaaaatatccgcctcaac 480

Qy    523 ctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttccacaataccggtagt 582
          |||||||||||||||||||||||||||||||| |||||||||||||| ||||||||
Db    481 ctgaccgacaaccgcagcaccggacaacggcttgccgaccgtttccacaatgccggtagt 540

Qy    583 atgctgacgcaaggagtaggcgacggattcaaacgcgccacccgatacagccccgagctg 642
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    541 atgctgacgcaaggagtaggcgacggattcaaacgcgccacccgatacagccccgagctg 600

Qy    643 gacagatcgggcaatgccgccgaagctttcaacggcactgcagatatcgtcaaaaacatc 702
          |||||||||||||||||||||||||||| |||||||||||||||||||| |||||||||
Db    601 gacagatcgggcaatgccgccgaagccttcaacggcactgcagatatcgttaaaaacatc 660

Qy    703 atcggcgcggcaggagaaattgt 725
          |||||||| ||||||||||||||
Db    661 atcggcgctgcaggagaaattgt 683
```

RESULT 24
AAA81489
ID AAA81489 standard; DNA; 837096 BP.
XX
AC AAA81489;
XX
DT 04-DEC-2000 (first entry)
XX
DE N. meningitidis partial DNA sequence gnm_37 SEQ ID NO:37.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
KW antigen; vaccine; diagnosis; infection; antibacterial; identification;
KW Meningococcus B; MenB; ds.
XX
OS Neisseria meningitidis.

```
XX
PN   WO200022430-A2.
XX
PD   20-APR-2000.
XX
PF   08-OCT-1999;   99WO-US23573.
XX
PR   09-OCT-1998;   98US-0103794.
PR   30-APR-1999;   99US-0132068.
XX
PA   (CHIR ) CHIRON CORP.
XX
PI   Frazer CM,  Hickey E,  Peterson J,  Tettelin H,  Venter JC;
PI   Masignani V,  Galeotti C,  Mora M,  Ratti G,  Scarselli M,  Scarlato V;
PI   Rappuoli R,  Pizza M;
XX
DR   WPI; 2000-318079/27.
XX
PT   Isolated nucleotide sequences of Neisseria meningitidis which can be
PT   used in the diagnosis and treatment of N. meningitidis infection and
PT   other Neisserial infections, for example, N.gonorrhoea -
XX
PS   Claim 7; Page 629-865; 1760pp; English.
XX
CC   The present invention describes methods of obtaining immunogenic
CC   proteins from Neisseria genomic sequences. AAA81453 to AAA82414
CC   represent specifically claimed Neisseria meningitidis genomic DNA
CC   sequences; AAA81260 to AAA81303 and AAB25620 to AAB25663 represent
CC   Neisseria DNA sequences and their corresponding proteins; AAA81254 to
CC   AAA81259 and AAA81304 to AAA81321 represent PCR primers used in the
CC   isolation of Neisseria meningitidis DNA sequences; and AAA81322 to
CC   AAA81452 represent Neisseria meningitidis MenB polynucleotide ORF
CC   sequences, which are all used in the exemplification of the present
CC   invention. The nucleic acid sequences, protein sequences, and antibodies
CC   against them, can be used in the manufacture of a composition. The
CC   composition can be used as a medicament (or in the manufacture of a
CC   medicament) for treating, preventing or diagnosing infection due to
CC   Neisserial bacteria. For example, some of the identified proteins could
CC   be components of vaccines against Meningococcus B; against all serotypes;
CC   and/or against all pathogenic Neissariae. Identification of sequences
CC   from the bacterium will also facilitate production of biological probes,
CC   particularly organism-specific probes. Attempts to make efficacious
CC   Meningococcus B vaccines have failed mainly due to antigen tolerance.
CC   Multivalent vaccines have also been tried but none have successfully
CC   overcome antigenic variability. The provision of further, complete
CC   sequences may provide an opportunity to identify secreted or surface
CC   exposed proteins that may be presumed targets for the immune system and
CC   which are not antigenically variable or at least more conserved than
CC   other more variable regions.
XX
SQ   Sequence 837096 BP; 207534 A; 227065 C; 205215 G; 197280 T; 2 other;

  Query Match             33.7%;  Score 563.8;  DB 21;  Length 837096;
  Best Local Similarity   95.6%;  Pred. No. 3.7e-162;
  Matches  580;  Conservative    0;  Mismatches   27;  Indels    0;  Gaps    0;

Qy    703 atcggcgcggcaggagaaattgtcggcgcaggcgatgccgtgcagggtataagcgaaggc 762
          ||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||||||||
Db      1 atcggcgcggcaggagaaattgtcggcgcaggcgatgccgtgcagggcataagcgaaggc 60

Qy    763 tcaaacattgctgttatgcacggcttgggtctgctttccaccgaaaacaagatggcgcgc 822
          |||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||||
Db     61 tcaaacattgctgtcatgcacggcttgggtctgctttccaccgaaaacaagatggcgcgc 120

Qy    823 atcaacgatttggcagatatggcgcaactcaaagactatgccgcagcagccatccgcgat 882
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    121 atcaacgatttggcagatatggcgcaactcaaagactatgccgcagcagccatccgcgat 180

Qy    883 tgggcagtccaaaaccccaatgccgcacaaggcatagaagccgtcagcaatatctttacg 942
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||| |
Db    181 tgggcagtccaaaaccccaatgccgcacaaggcatagaagccgtcagcaatatctttatg 240

Qy    943 gcagtcatccccgtcaaagggattggagctgttcggggaaaatacggcttgggcggcatc 1002
          |||| ||||||| ||||||||||||||||||||||||||||||||||||||||||||||||
Db    241 gcagccatccccatcaaagggattggagctgttcggggaaaatacggcttgggcggcatc 300

Qy   1003 acggcacatcctgtcaagcggtcgcagatgggcgagatcgcattgccgaaagggaaatcc 1062
          |||||||||||| ||||||||||||||||||||| ||||||||||||||||||||||||
Db    301 acggcacatcctatcaagcggtcgcagatgggcgcgatcgcattgccgaaagggaaatcc 360

Qy   1063 gccgtcagcgacaattttgccgatgcggcatacgccaaatacccgtccccttaccattcc 1122
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    361 gccgtcagcgacaattttgccgatgcggcatacgccaaatacccgtccccttaccattcc 420

Qy   1123 cgaaatatccgttcaaacttggagcagcgttacggcaaagaaaacatcacctcctcaacc 1182
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    421 cgaaatatccgttcaaacttggagcagcgttacggcaaagaaaacatcacctcctcaacc 480

Qy   1183 gtgccgccgtcaaacggaaagaatgtgaaactggcaaacaaacgccacccgaagaccaaa 1242
          |||||||||||||||| || ||||| ||||||||| || ||||||||||||||||||||
Db    481 gtgccgccgtcaaacggcaaaaatgtcaaactggcagaccaacgccacccgaagacaggc 540

Qy   1243 gtgccgtttgacggtaaagggtttccgaattttgaaaaagacgtaaaatacgatacgaga 1302
          || |||||||||||||||||||||||||||||||||| ||  |||| ||||| |||||||
Db    541 gtaccgtttgacggtaaagggtttccgaattttgagaagcacgtgaaatatgatacgaag 600

Qy   1303 attaata 1309
          |  |||
Db    601 ctcgata 607


RESULT  25
AAZ54164/c
ID   AAZ54164 standard; DNA; 396 BP.
XX
AC   AAZ54164;
XX
DT   21-MAR-2000  (first entry)
XX
DE   Neisseria meningitidis ORF 686 partial DNA sequence SEQ ID NO:2277.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW   antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW   antibacterial; gene therapy; ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO9957280-A2.
XX
PD   11-NOV-1999.
XX
PF   30-APR-1999;   99WO-US09346.
XX
PR   01-MAY-1998;   98US-0083758.
PR   31-JUL-1998;   98US-0094869.
PR   02-SEP-1998;   98US-0098994.
PR   02-SEP-1998;   98US-0099062.
PR   09-OCT-1998;   98US-0103749.
PR   09-OCT-1998;   98US-0103794.
PR   09-OCT-1998;   98US-0103796.
PR   25-FEB-1999;   99US-0121528.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Fraser C,  Galeotti C,  Grandi G,  Hickey E,  Masignani V,  Mora M;
PI   Petersen J,  Pizza M,  Rappuoli R,  Ratti G,  Scalato E,  Scarselli M;
PI   Tettelin H,  Venter JC;
XX
DR   WPI; 2000-062150/05.
DR   P-PSDB; AAY75402.
XX
PT   Novel Neisserial polypeptides predicted to be useful antigens for
PT   vaccines and diagnostics -
XX
```

```
PS   Claim 7; Page 1101; 1453pp; English.
XX
CC   AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC   represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC   and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC   PCR primers used in the exemplification of the present invention. The
CC   polypeptides, the polynucleotides, antibodies and compositions of
CC   the invention can be used as vaccines, as diagnostic reagents, and as
CC   immunogenic compositions. The polypeptides can be used in the
CC   manufacture of medicaments for treating or preventing infection due to
CC   Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC   presence of Neisseria bacteria, or to raise antibodies. They may also
CC   be used to screen for agonists or antagonists, which may themselves
CC   have use as antibacterial agents. The polynucleotides of the invention
CC   may also be used in gene therapy protocols.
XX
SQ   Sequence 396 BP; 66 A; 103 C; 122 G; 105 T; 0 other;

  Query Match           23.7%;  Score 396;  DB 21;  Length 396;
  Best Local Similarity  100.0%;  Pred. No. 3.6e-112;
  Matches  396;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy     328 tcacattccgattctgatgaagccggtagtcccgttgacggattcagcctttaccgcatc 387
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     396 TCACATTCCGATTCTGATGAAGCCGGTAGTCCCGTTGACGGATTCAGCCTTTACCGCATC 337

Qy     388 cattgggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggc 447
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     336 CATTGGGACGGATACGAACACCATCCCGCCGACGGCTATGACGGGCCACAGGGCGGCGGC 277

Qy     448 tatcccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaa 507
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     276 TATCCCGCTCCCAAAGGCGCGAGGGATATATACAGCTACGACATAAAAGGCGTTGCCCAA 217

Qy     508 aatatccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttc 567
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     216 AATATCCGCCTCAACCTGACCGACAACCGCAGCACCGGACAACGGCTTGTCGACCGTTTC 157

Qy     568 cacaataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccga 627
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     156 CACAATACCGGTAGTATGCTGACGCAAGGAGTAGGCGACGGATTCAAACGCGCCACCCGA 97

Qy     628 tacagccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagat 687
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      96 TACAGCCCCGAGCTGGACAGATCGGGCAATGCCGCCGAAGCTTTCAACGGCACTGCAGAT 37

Qy     688 atcgtcaaaaacatcatcggcgcggcaggagaaatt 723
           |||||||||||||||||||||||||||||||||||
Db      36 ATCGTCAAAAACATCATCGGCGCGGCAGGAGAAATT 1


RESULT  26
AAZ54163/c
ID   AAZ54163 standard; DNA; 492 BP.
XX
AC   AAZ54163;
XX
DT   21-MAR-2000  (first entry)
XX
DE   Neisseria meningitidis ORF 686 partial DNA sequence SEQ ID NO:2275.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW   antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW   antibacterial; gene therapy; ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO9957280-A2.
XX
PD   11-NOV-1999.
XX
PF   30-APR-1999;   99WO-US09346.
XX
PR   01-MAY-1998;   98US-0083758.
PR   31-JUL-1998;   98US-0094869.
PR   02-SEP-1998;   98US-0098994.
PR   02-SEP-1998;   98US-0099062.
PR   09-OCT-1998;   98US-0103749.
PR   09-OCT-1998;   98US-0103794.
PR   09-OCT-1998;   98US-0103796.
PR   25-FEB-1999;   99US-0121528.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Fraser C,  Galeotti C,  Grandi G,  Hickey E,  Masignani V,  Mora M;
PI   Petersen J,  Pizza M,  Rappuoli R,  Ratti G,  Scalato E,  Scarselli M;
PI   Tettelin H,  Venter JC;
XX
DR   WPI; 2000-062150/05.
DR   P-PSDB; AAY75401.
XX
PT   Novel Neisserial polypeptides predicted to be useful antigens for
PT   vaccines and diagnostics
XX
PS   Claim 7; Page 1101; 1453pp; English.
XX
CC   AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC   represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC   and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC   PCR primers used in the exemplification of the present invention. The
CC   polypeptides, the polynucleotides, antibodies and compositions of
CC   the invention can be used as vaccines, as diagnostic reagents, and as
CC   immunogenic compositions. The polypeptides can be used in the
CC   manufacture of medicaments for treating or preventing infection due to
CC   Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC   presence of Neisseria bacteria, or to raise antibodies. They may also
CC   be used to screen for agonists or antagonists, which may themselves
CC   have use as antibacterial agents. The polynucleotides of the invention
CC   may also be used in gene therapy protocols.
XX
SQ   Sequence 492 BP; 82 A; 120 C; 154 G; 124 T; 12 other;

  Query Match           23.2%;  Score 387;  DB 21;  Length 492;
  Best Local Similarity  94.7%;  Pred. No. 2.5e-109;
  Matches  393;  Conservative    0;  Mismatches   22;  Indels    0;  Gaps    0;

Qy     328 tcacattccgattctgatgaagccggtagtcccgttgacggattcagcctttaccgcatc 387
           |||||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||
Db     492 TCACATTCCGATTCTGATGAAGCCGGTAGTCCCGTTGACGGATTTAGCCTTTACCGCATC 433

Qy     388 cattgggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggc 447
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     432 CATTGGGACGGATACGAACACCATCCCGCCGACGGCTATGACGGGCCACAGGGCGGCGGC 373

Qy     448 tatcccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaa 507
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     372 TATCCCGCTCCCAAAGGCGCGAGGGATATATACAGCTACGACATAAAAGGCGTTGCCCAA 313

Qy     508 aatatccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttc 567
           |||||||||||||||||||||||||||||||||||||||||||| ||||||||||
Db     312 AATATCCGCCTCAACCTGACCGACAACCGCAGCACCGGACAACGGCTTGCCGACCGTTTC 253

Qy     568 cacaataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccga 627
           |||||| ||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     252 CACAATGCCGGTAGTATGCTGACGCAAGGAGTAGGCGACGGATTCAAACGCGCCACCCGA 193

Qy     628 tacagccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagat 687
           ||||||||||||||||||||||||||||||||||||||||||| ||||||||||||||||
Db     192 TACAGCCCCGAGCTGGACAGATCGGGCAATGCCGCCGAAGCCTTCAACGGCACTGCAGAT 133

Qy     688 atcgtcaaaaacatcatcggcgcggcaggagaaattgtcggcgcaggcgatgccg 742
           ||||| |||||||||||||||| ||||||||||||          |||
Db     132 ATCGTTAAAAACATCATCGGCGCTGCAGGAGAAATTNNNNNNNNNNNNNCGCTCCG 78
```

```
RESULT  27
AAZ54162/c
ID   AAZ54162 standard; DNA; 396 BP.
XX
AC   AAZ54162;
XX
DT   21-MAR-2000  (first entry)
XX
DE   Neisseria gonorrheae ORF 686 partial DNA sequence SEQ ID NO:2273.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW   antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW   antibacterial; gene therapy; ds.
XX
OS   Neisseria gonorrheae.
XX
PN   WO9957280-A2.
XX
PD   11-NOV-1999.
XX
PF   30-APR-1999;   99WO-US09346.
XX
PR   01-MAY-1998;   98US-0083758.
PR   31-JUL-1998;   98US-0094869.
PR   02-SEP-1998;   98US-0098994.
PR   02-SEP-1998;   98US-0099062.
PR   09-OCT-1998;   98US-0103749.
PR   09-OCT-1998;   98US-0103794.
PR   09-OCT-1998;   98US-0103796.
PR   25-FEB-1999;   99US-0121528.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Fraser C,  Galeotti C,  Grandi G,  Hickey E,  Masignani V,  Mora M;
PI   Petersen J,  Pizza M,  Rappuoli R,  Ratti G,  Scalato E,  Scarselli M;
PI   Tettelin H,  Venter JC;
XX
DR   WPI; 2000-062150/05.
DR   P-PSDB; AAY75400.
XX
PT   Novel Neisserial polypeptides predicted to be useful antigens for
PT   vaccines and diagnostics  -
XX
PS   Claim 7; Page 1100; 1453pp; English.
XX
CC   AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC   represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC   and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC   PCR primers used in the exemplification of the present invention. The
CC   polypeptides, the polynucleotides, antibodies and compositions of
CC   the invention can be used as vaccines, as diagnostic reagents, and as
CC   immunogenic compositions. The polypeptides can be used in the
CC   manufacture of medicaments for treating or preventing infection due to
CC   Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC   presence of Neisseria bacteria, or to raise antibodies. They may also
CC   be used to screen for agonists or antagonists, which may themselves
CC   have use as antibacterial agents. The polynucleotides of the invention
CC   may also be used in gene therapy protocols.
XX
SQ   Sequence 396 BP; 62 A; 104 C; 127 G; 103 T; 0 other;

  Query Match             23.0%;  Score 384.8;  DB 21;  Length 396;
  Best Local Similarity   98.2%;  Pred. No. 1.1e-108;
  Matches  389;  Conservative    0;  Mismatches    7;  Indels    0;  Gaps    0;

Qy     328 tcacattccgattctgatgaagccggtagtcccgttgacggattcagccttttaccgcatc 387
           ||||||||||||||| |||||||||||||||||||||||||||||||||||||||||||||
Db     396 TCACATTCCGATTCTGACGAAGCCGGTAGTCCCGTTGACGGATTCAGCCTTTACCGCATC 337

Qy     388 cattgggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggc 447
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     336 CATTGGGACGGATACGAACACCATCCCGCCGACGGCTATGACGGGCCACAGGGCGGCGGC 277

Qy     448 tatcccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaa 507
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     276 TATCCCGCTCCCAAAGGCGCGAGGGATATATACAGCTACGACATAAAAGGCGTTGCCCAA 217

Qy     508 aatatccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttc 567
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     216 AATATCCGCCTCAACCTGACCGACAACCGCAGCACCGGACAACGGCTTGCCGACCGTTTC 157

Qy     568 cacaataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccga 627
           |||||| ||||   ||||||||||||||||||||||||||||||||||||||||||||||
Db     156 CACAATGCCGGCGCTATGCTGACGCAAGGAGTAGGCGACGGATTCAAACGCGCCACCCGA 97

Qy     628 tacagccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagat 687
           |||||||||||||||||||||||||||||||||||||||| ||||||||||||||||||
Db      96 TACAGCCCCGAGCTGGACAGATCGGGCAATGCCGCCGAAGCCTTCAACGGCACTGCAGAT 37

Qy     688 atcgtcaaaaacatcatcggcgcggcaggagaaatt 723
           ||||||||||||||||||||||||||||||||||||
Db      36 ATCGTCAAAAACATCATCGGCGCGGCAGGAGAAATT 1


RESULT  28
AAZ54260
ID   AAZ54260 standard; DNA; 1731 BP.
XX
AC   AAZ54260;
XX
DT   21-MAR-2000  (first entry)
XX
DE   Neisseria gonorrheae ORF 730 partial DNA sequence SEQ ID NO:2469.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW   antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW   antibacterial; gene therapy; ds.
XX
OS   Neisseria gonorrheae.
XX
PN   WO9957280-A2.
XX
PD   11-NOV-1999.
XX
PF   30-APR-1999;   99WO-US09346.
XX
PR   01-MAY-1998;   98US-0083758.
PR   31-JUL-1998;   98US-0094869.
PR   02-SEP-1998;   98US-0098994.
PR   02-SEP-1998;   98US-0099062.
PR   09-OCT-1998;   98US-0103749.
PR   09-OCT-1998;   98US-0103794.
PR   09-OCT-1998;   98US-0103796.
PR   25-FEB-1999;   99US-0121528.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Fraser C,  Galeotti C,  Grandi G,  Hickey E,  Masignani V,  Mora M;
PI   Petersen J,  Pizza M,  Rappuoli R,  Ratti G,  Scalato E,  Scarselli M;
PI   Tettelin H,  Venter JC;
XX
DR   WPI; 2000-062150/05.
DR   P-PSDB; AAY75498.
XX
PT   Novel Neisserial polypeptides predicted to be useful antigens for
PT   vaccines and diagnostics  -
XX
PS   Claim 7; Page 1181; 1453pp; English.
XX
CC   AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC   represent novel Neisseria meningitis and N. gonorrheae polynucleotides
```

CC and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC PCR primers used in the exemplification of the present invention. The
CC polypeptides, the polynucleotides, antibodies and compositions of
CC the invention can be used as vaccines, as diagnostic reagents, and as
CC immunogenic compositions. The polypeptides can be used in the
CC manufacture of medicaments for treating or preventing infection due to
CC Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC presence of Neisseria bacteria, or to raise antibodies. They may also
CC be used to screen for agonists or antagonists, which may themselves
CC have use as antibacterial agents. The polynucleotides of the invention
CC may also be used in gene therapy protocols.
XX
SQ Sequence 1731 BP; 507 A; 521 C; 418 G; 285 T; 0 other;

Query Match 18.1%; Score 302; DB 21; Length 1731;
Best Local Similarity 58.8%; Pred. No. 1.2e-82;
Matches 540; Conservative 0; Mismatches 375; Indels 3; Gaps 1;

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Qy     35 ccatactggcagtgtgcctgccgatgcatgcacacgcctcagatttggcaaacgattctt 94
Db     44 ccgtagcggcggtcgcactcatacagcccgccctcgcggcggacttggcgcaagacccgt 103

Qy     95 ttatccggcaggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcg 154
Db    104 tcattaccgataacacccaacggcagcactacgaacccggcggcaaataccacctcttcg 163

Qy    155 gcagcaggggggaac---ttgccgagcgcagcggtcatatcggattgggaaacatacaaa 211
Db    164 gcgacccgcgcggcagcgtttccgaccgcaccggcaaaatcaacgtcatccaagactata 223

Qy    212 gccatcagttgggcaacctgttcatccagcaggcggccattaaaggaaatatcggctaca 271
Db    224 cccaccagatgggcaacctgctcatccaacaggcggcaatccaaggcaatcttggttaca 283

Qy    272 ttgtccgcttttccgatcacgggcacgaagtccattccccccttcgacaaccatgcctcac 331
Db    284 ccgtccgcttttccggacacggacacgaagaacacgccccccttcgacaaccacgccgccg 343

Qy    332 attccgattctgatgaagccggtagtcccgttgacggattcagcctttaccgcatccatt 391
Db    344 acagcgcaagcgaagaaaaaggcaacgttgacgacggctttaccgtgtaccggctcaact 403

Qy    392 gggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggctatc 451
Db    404 gggaaggacacgaacatcatcccgccgatgcctacgacggcccgaagggcggcaattacc 463

Qy    452 ccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaaaata 511
Db    464 ccaaacctacgggcgcacgagacgaatacacctatcacgtcaacggcacagcccgcagta 523

Qy    512 tccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttccaca 571
Db    524 tcaaactcaatccgaccgacacccgcagcatccggcaacgcatattcgacaactacaaca 583

Qy    572 ataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccgataca 631
Db    584 acctcggcagcaatttctccgaccgcgccgatgaagccaacagaaaaatgttcgagcaca 643

Qy    632 gccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagatatcg 691
Db    644 atgccaagctcgaccgctggggcaacagcatggagtttgtcaacggcgtcgccgccggcg 703

Qy    692 tcaaaaacatcatcggcgcggcaggagaaattgtcggcgcaggcgatgccgtgcagggta 751
Db    704 cgctcaacccctttatcagcgcgggcgaagccttgggcataggcgacatactgtacggaa 763

Qy    752 taagcgaaggctcaaacattgctgttatgcacggcttgggtctgctttccaccgaaaaca 811
Db    764 cgcgctatgccatagacaaagccgcgatgcgcaacatcgccccctttacccgccgagggca 823

Qy    812 agatggcgcgcatcaacgatttggcagatatggcgcaactcaaagactatgccgcagcag 871
```

Db 824 aattcgccgccatcggcggcttgggcagcgcggcgggctttgaaaaaaatacgcgcgaag 883

Qy 872 ccatccgcgattgggcagtccaaaaccccaatgccgcacaaggcatagaagccgtcagca 931
Db 884 ccgttgaccggtggatacaggaaaaccccaatgccgccgaaaccgtcgaagccctggtca 943

Qy 932 atatctttacggcagtca 949
Db 944 acgtcctgccgtttgcca 961

RESULT 29
AAZ54261
ID AAZ54261 standard; DNA; 1404 BP.
XX
AC AAZ54261;
XX
DT 21-MAR-2000 (first entry)
XX
DE Neisseria meningitidis ORF 730 partial DNA sequence SEQ ID NO:2471.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW antibacterial; gene therapy; ds.
XX
OS Neisseria meningitidis.
XX
PN WO9957280-A2.
XX
PD 11-NOV-1999.
XX
PF 30-APR-1999; 99WO-US09346.
XX
PR 01-MAY-1998; 98US-0083758.
PR 31-JUL-1998; 98US-0094869.
PR 02-SEP-1998; 98US-0098994.
PR 02-SEP-1998; 98US-0099062.
PR 09-OCT-1998; 98US-0103749.
PR 09-OCT-1998; 98US-0103794.
PR 09-OCT-1998; 98US-0103796.
PR 25-FEB-1999; 99US-0121528.
XX
PA (CHIR) CHIRON CORP.
PA (GENO-) INST GENOMIC RES.
XX
PI Fraser C, Galeotti C, Grandi G, Hickey E, Masignani V, Mora M;
PI Petersen J, Pizza M, Rappuoli R, Ratti G, Scalato E, Scarselli M;
PI Tettelin H, Venter JC;
XX
DR WPI; 2000-062150/05.
DR P-PSDB; AAY75499.
XX
PT Novel Neisserial polypeptides predicted to be useful antigens for
PT vaccines and diagnostics -
XX
PS Claim 7; Page 1181-1182; 1453pp; English.
XX
CC AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC PCR primers used in the exemplification of the present invention. The
CC polypeptides, the polynucleotides, antibodies and compositions of
CC the invention can be used as vaccines, as diagnostic reagents, and as
CC immunogenic compositions. The polypeptides can be used in the
CC manufacture of medicaments for treating or preventing infection due to
CC Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC presence of Neisseria bacteria, or to raise antibodies. They may also
CC be used to screen for agonists or antagonists, which may themselves
CC have use as antibacterial agents. The polynucleotides of the invention
CC may also be used in gene therapy protocols.
XX
SQ Sequence 1404 BP; 430 A; 397 C; 333 G; 244 T; 0 other;

```
Query Match             17.6%;  Score 294.4;  DB 21;  Length 1404;
Best Local Similarity   58.1%;  Pred. No. 2.4e-80;
Matches  539;  Conservative    0;  Mismatches  386;  Indels    3;  Gaps    1;

Qy      35 ccatactggcagtgtgcctgccgatgcatgcacacgcctcagatttggcaaacgattctt 94
           || ||  ||| |     ||      ||  || | |||  | || |||||  | ||  | |
Db      44 ccgtagcggcggccgcactcatacagcccgccctcgcggcggacttggcgcaagacccgt 103

Qy      95 ttatccggcaggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcg 154
           | ||     |       | | || ||||| | |||||||| ||| ||||||||||| ||||
Db     104 tcattaccgataacgcccaacggcagcactacgaacccggcggcaaataccacctcttcg 163

Qy     155 gcagcaggggggaac---ttgccgagcgcagcggtcatatcggattgggaaacatacaaa 211
           ||  |  | | |      || |||| |||| |||  | |||    |      |     | |
Db     164 gcgacccgcgcggcagcgtttccgaccgcaccggcaaaatcaacgtcatccaagactata 223

Qy     212 gccatcagttgggcaacctgttcatccagcaggcggccattaaaggaaatatcggctaca 271
           |||  ||| ||||||||||| ||||||| |||||   ||| || || |  |||||||||
Db     224 cccaccagatgggcaacctgctcatccaacaggcaaacatcaacggcacaatcggctacc 283

Qy     272 ttgtccgcttttccgatcacgggcacgaagtccattcccccttcgacaaccatgcctcac 331
           ||||||||||  ||||| |||||||  ||  ||||||||||||||| ||| |
Db     284 acacccgcttttccggacacggacacgaagaacacgcccccttcgacaaccacgccgccg 343

Qy     332 attccgattctgatgaagccggtagtcccgttgacggattcagcctttaccgcatccatt 391
           |   ||     || |||   || |     |  || || || | | | |||||  || | |
Db     344 acagcgcgagcgaagaaaaaggcaacgttgacgaaggctttaccgtataccggctcaact 403

Qy     392 gggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggctatc 451
           |||| ||| ||||||| |||||||||| | ||| ||||| ||  |||||||   || |
Db     404 gggaaggacacgaacatcatcccgccgatgcctacgacggcccgaagggcggcaattacc 463

Qy     452 ccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaaaata 511
           ||   || |  ||||  | ||   ||||| ||| || | || |||   ||||  | ||
Db     464 ccaaacctacgggcgcacgagacgaatacacctatcacgtcaacggcacagcccgcagta 523

Qy     512 tccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttccaca 571
           ||   ||||| | |||||||| |||||||| | | |||||  |   ||||  || | ||
Db     524 tcaaactcaatccgaccgacacccgcagcatccggcaacgcatatccgacaattacagca 583

Qy     572 ataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccgataca 631
           |   ||| || |   |  |  |  | |  |  | ||  |    || |       |  |||
Db     584 acctcggcagcaatttctccgaccgcgccgatgaagccaacagaaaaatgttcgagcaca 643

Qy     632 gccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagatatcg 691
           || |||| ||| | | ||||||   |   ||   | ||||||||   || |    ||
Db     644 atgccaagctcgaccgctggggcaacagcatggagtttatcaacggcgtcgccgccggcg 703

Qy     692 tcaaaaacatcatcggcgcggcaggagaaattgtcggcgcaggcgatgccgtgcagggta 751
           |||  | |   |  || || |||    | |||  ||||||     || | || |
Db     704 cgctcaacccctttatcagcgcgggcgaagccttgggcataggcgacatactgtacggaa 763

Qy     752 taagcgaaggctcaaacattgctgttatgcacggcttgggtctgctttccaccgaaaaca 811
           || | | |  | |||  || |  |||| |  | | |  |   |  || |||   ||
Db     764 cgcgctatgccatagacaaagccgcaatgcgcaacatcgccccctgcccgccgagggca 823

Qy     812 agatggcgcgcatcaacgatttggcagatatggcgcaactcaaagactatgccgcagcag 871
           |  | ||   ||||  ||  ||||      |||||    |  || |  || |    | ||
Db     824 aattcgccgtcatcggcggcttgggcagcgtggcgggctttgaaaagaatacgcgcgaag 883

Qy     872 ccatccgcgattgggcagtccaaaaccccaatgccgcacaaggcatagaagccgtcagca 931
           || |   |  |||  |    |||| ||||||||||  ||  | | |||||||||  ||
Db     884 ccgttgaccggtggatacaggaaaatcccaatgccgccgaaaccgtcgaagccgtcttca 943

Qy     932 atatctttacggcagtcatccccgtcaa 959
           |  |     | |||| ||    ||  ||
Db     944 acgttgccgcagcagccaaagtcgcgaa 971


RESULT  30
AAA81467/c
ID   AAA81467 standard; DNA; 25509 BP.
XX
AC   AAA81467;
XX
DT   04-DEC-2000  (first entry)
XX
DE   N. meningitidis partial DNA sequence gnm_15 SEQ ID NO:15.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
KW   antigen; vaccine; diagnosis; infection; antibacterial; identification;
KW   Meningococcus B; MenB; ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO200022430-A2.
XX
PD   20-APR-2000.
XX
PF   08-OCT-1999;   99WO-US23573.
XX
PR   09-OCT-1998;   98US-0103794.
PR   30-APR-1999;   99US-0132068.
XX
PA   (CHIR ) CHIRON CORP.
XX
PI   Frazer CM,  Hickey E,  Peterson J,  Tettelin H,  Venter JC;
PI   Masignani V,  Galeotti C,  Mora M,  Ratti G,  Scarselli M,  Scarlato V;
PI   Rappuoli R,  Pizza M;
XX
DR   WPI; 2000-318079/27.
XX
PT   Isolated nucleotide sequences of Neisseria meningitidis which can be
PT   used in the diagnosis and treatment of N. meningitidis infection and
PT   other Neisserial infections, for example, N.gonorrhoea -
XX
PS   Claim 7; Page 399-406; 1760pp; English.
XX
CC   The present invention describes methods of obtaining immunogenic
CC   proteins from Neisseria genomic sequences. AAA81453 to AAA82414
CC   represent specifically claimed Neisseria meningitidis genomic DNA
CC   sequences; AAA81260 to AAA81303 and AAB25620 to AAB25663 represent
CC   Neisseria DNA sequences and their corresponding proteins; AAA81254 to
CC   AAA81259 and AAA81304 to AAA81321 represent PCR primers used in the
CC   isolation of Neisseria meningitidis DNA sequences; and AAA81322 to
CC   AAA81452 represent Neisseria meningitidis MenB polynucleotide ORF
CC   sequences, which are all used in the exemplification of the present
CC   invention. The nucleic acid sequences, protein sequences, and antibodies
CC   against them, can be used in the manufacture of a composition. The
CC   composition can be used as a medicament (or in the manufacture of a
CC   medicament) for treating, preventing or diagnosing infection due to
CC   Neisserial bacteria. For example, some of the identified proteins could
CC   be components of vaccines against Meningococcus B; against all serotypes;
CC   and/or against all pathogenic Neissariae. Identification of sequences
CC   from the bacterium will also facilitate production of biological probes,
CC   particularly organism-specific probes. Attempts to make efficacious
CC   Meningococcus B vaccines have failed mainly due to antigen tolerance.
CC   Multivalent vaccines have also been tried but none have successfully
CC   overcome antigenic variability. The provision of further, complete
CC   sequences may provide an opportunity to identify secreted or surface
CC   exposed proteins that may be presumed targets for the immune system and
CC   which are not antigenically variable or at least more conserved than
CC   other more variable regions.
XX
SQ   Sequence 25509 BP; 6157 A; 6156 C; 6549 G; 6647 T; 0 other;


Query Match             17.6%;  Score 294.4;  DB 21;  Length 25509;
Best Local Similarity   58.1%;  Pred. No. 1.4e-79;
Matches  539;  Conservative    0;  Mismatches  386;  Indels    3;  Gaps    1;

Qy      35 ccatactggcagtgtgcctgccgatgcatgcacacgcctcagatttggcaaacgattctt 94
           || ||  ||| |     ||      ||  || | |||  | || |||||  | ||  | |
Db   24715 CCGTAGCGGCGGCCGCACTCATACAGCCCGCCCTCGCGGCGGACTTGGCGCAAGACCCGT 24656
```

```
Qy      95 ttatccggcaggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcg 154
Db   24655 TCATTACCGATAACGCCCAACGGCAGCACTACGAACCCGGCGGCAAATACCACCTCTTCG 24596

Qy     155 gcagcagggggaac---ttgccgagcgcagcggtcatatcggattgggaaacatacaaa 211
Db   24595 GCGACCCGCGCGGCAGCGTTTCCGACCGCACCGGCAAAATCAACGTCATCCAAGACTATA 24536

Qy     212 gccatcagttgggcaacctgttcatccagcaggcggccattaaaggaaatatcggctaca 271
Db   24535 CCCACCAGATGGGCAACCTGCTCATCCAACAGGCAAACATCAACGGCACAATCGGCTACC 24476

Qy     272 ttgtccgcttttccgatcacgggcacgaagtccattccccccttcgacaaccatgcctcac 331
Db   24475 ACACCCGCTTTTCCGGACACGGACACGAAGAACACGCCCCCTTCGACAACCACGCCGCCG 24416

Qy     332 attccgattctgatgaagccggtagtcccgttgacggattcagcctttaccgcatccatt 391
Db   24415 ACAGCGCGAGCGAAGAAAAAGGCAACGTTGACGAAGGCTTTACCGTATACCGGCTCAACT 24356

Qy     392 gggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggctatc 451
Db   24355 GGGAAGGACACGAACATCATCCCGCCGATGCCTACGACGGCCCGAAGGGCGGCAATTACC 24296

Qy     452 ccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaaaata 511
Db   24295 CCAAACCTACGGGCGCACGAGACGAATACACCTATCACGTCAACGGCACAGCCCGCAGTA 24236

Qy     512 tccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttccaca 571
Db   24235 TCAAACTCAATCCGACCGACACCCGCAGCATCCGGCAACGCATATCCGACAATTACAGCA 24176

Qy     572 ataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccgataca 631
Db   24175 ACCTCGGCAGCAATTTCTCCGACCGCGCCGATGAAGCCAACAGAAAAATGTTCGAGCACA 24116

Qy     632 gccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagatatcg 691
Db   24115 ATGCCAAGCTCGACCGCTGGGGCAACAGCATGGAGTTTATCAACGGCGTCGCCGCCGGCG 24056

Qy     692 tcaaaaacatcatcggcgcggcaggagaaattgtcggcgcaggcgatgccgtgcagggta 751
Db   24055 CGCTCAACCCCTTTATCAGCGCGGGCGAAGCCTTGGGCATAGGCGACATACTGTACGGAA 23996

Qy     752 taagcgaaggctcaaacattgctgttatgcacggcttgggtctgctttccaccgaaaaca 811
Db   23995 CGCGCTATGCCATAGACAAAGCCGCAATGCGCAACATCGCCCCCTTGCCCGCCGAGGGCA 23936

Qy     812 agatggcgcgcatcaacgatttggcagatatggcgcaactcaaagactatgccgcagcag 871
Db   23935 AATTCGCCGTCATCGGCGGCTTGGGCAGCGTGGCGGGCTTTGAAAAGAATACGCGCGAAG 23876

Qy     872 ccatccgcgattgggcagtccaaaaccccaatgccgcacaaggcatagaagccgtcagca 931
Db   23875 CCGTTGACCGGTGGATACAGGAAAATCCCAATGCCGCCGAAACCGTCGAAGCCGTCTTCA 23816

Qy     932 atatctttacggcagtcatccccgtcaa 959
Db   23815 ACGTTGCCGCAGCAGCCAAAGTCGCGAA 23788


RESULT 31
AAF21607/c
ID   AAF21607 standard; DNA; 349980 BP.
XX
AC   AAF21607;
XX
DT   13-MAR-2001  (first entry)
XX
DE   Neisseria meningitidis B nucleotide sequence SEQ ID NO:108.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; immunogenic; vaccine;
KW   diagnosis; antigen; detection; infection; gene therapy; antibacterial;
KW   ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO200066791-A1.
XX
PD   09-NOV-2000.
XX
PF   08-MAR-2000; 2000WO-US05928.
XX
PR   30-APR-1999;   99US-0132068.
PR   08-OCT-1999;   99WO-US23573.
PR   28-FEB-2000; 2000GB-0004695.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Pizza M,  Hickey E,  Peterson J,  Tettelin H,  Venter JC,  Masignani V;
PI   Galeotti C,  Mora M,  Ratti G,  Scarselli M,  Scarlato V,  Rappuoli R;
PI   Frazer CM,  Grandi G;
XX
DR   WPI; 2000-647603/62.
XX
PT   Neisseria meningitidis B full length genome sequence and open reading
PT   frames are used to detect, treat and prevent Neisserial infections -
XX
PS   Claim 7; Appendix A; 692pp; English.
XX
CC   The present invention describes the full length genome of
CC   Neisseria meningitidis B (NMB). The sequences in AAF21544 and AAF21607
CC   to AAF21613 represent fragments of the NMB genomic sequence, as the
CC   sequence was too long to go in a record on its own it was split into 8
CC   sequences which overlap each other at the beginning and end of each
CC   sequence by 49980 bp (i.e. the last 49980 bp of AAF21544 is repeated at
CC   the beginning  of AAF21607, the last 49980 bp of AAF21607 are repeated at
CC   the beginning of AAF21608, and so on). AAF21545 to AAF21588 encode the
CC   Neisseria proteins given in AAB58550 to AAB58593, and AAF21589 to
CC   AAF21606 represent PCR primers which are used in the exemplification of
CC   the present invention. The NMB genome and fragments from it have
CC   antibacterial activity, and can be used in vaccines and gene therapy.
CC   Neisseria nucleic acids, proteins and/or antibodies which binds to the
CC   proteins can be used in compositions for treating or preventing infection
CC   due to Neisserial bacteria or as a diagnostic reagent for detecting the
CC   presence of Neisserial bacteria or of antibodies raised to Neisserial
CC   bacteria. Computers, computer memory, computer storage medium or computer
CC   databases can be used in a search to identify open reading frames (ORFs)
CC   or coding sequences within the NMB genome. The DNA sequences provide
CC   further opportunities to find antigenic or immunogenic proteins which are
CC   more effective in vaccines than the outer membrane proteins currently
CC   used.
XX
SQ   Sequence 349980 BP; 84410 A; 84863 C; 94187 G; 86520 T; 0 other;


  Query Match             17.6%;  Score 294.4;  DB 21;  Length 349980;
  Best Local Similarity   58.1%;  Pred. No. 7.1e-79;
  Matches  539;  Conservative    0;  Mismatches  386;  Indels    3;  Gaps    1;

Qy      35 ccatactggcagtgtgcctgccgatgcatgcacacgcctcagatttggcaaacgattctt 94
Db   77278 CCGTAGCGGCGGCCGCACTCATACAGCCCGCCCTCGCGGCGGACTTGGCGCAAGACCCGT 77219

Qy      95 ttatccggcaggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcg 154
Db   77218 TCATTACCGATAACGCCCAACGGCAGCACTACGAACCCGGCGGCAAATACCACCTCTTCG 77159

Qy     155 gcagcagggggaac---ttgccgagcgcagcggtcatatcggattgggaaacatacaaa 211
Db   77158 GCGACCCGCGCGGCAGCGTTTCCGACCGCACCGGCAAAATCAACGTCATCCAAGACTATA 77099

Qy     212 gccatcagttgggcaacctgttcatccagcaggcggccattaaaggaaatatcggctaca 271
Db   77098 CCCACCAGATGGGCAACCTGCTCATCCAACAGGCAAACATCAACGGCACAATCGGCTACC 77039
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Qy    272 ttgtccgcttttccgatcacgggcacgaagtccattcccccttcgacaaccatgcctcac 331
          ||||||||||  ||||| |||||||  ||  |||||||||||||||| ||| |
Db  77038 ACACCCGCTTTTCCGGACACGGACACGAAGAACACGCCCCCTTCGACAACCACGCCGCCG 76979

Qy    332 attccgattctgatgaagccggtagtcccgttgacggattcagcctttaccgcatccatt 391
          |   ||     || |||   || |     |  || || || | | | ||||| || | |
Db  76978 ACAGCGCGAGCGAAGAAAAAGGCAACGTTGACGAAGGCTTTACCGTATACCGGCTCAACT 76919

Qy    392 gggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggctatc 451
          |||| ||| ||||||| |||||||||| | ||| ||||| ||  |||||||||   || |
Db  76918 GGGAAGGACACGAACATCATCCCGCCGATGCCTACGACGGCCCGAAGGGCGGCAATTACC 76859

Qy    452 ccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaaaata 511
          ||   || |  ||||| | ||   ||||| |||  || | || |||   ||||  | ||
Db  76858 CCAAACCTACGGGCGCACGAGACGAATACACCTATCACGTCAACGGCACAGCCCGCAGTA 76799

Qy    512 tccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttccaca 571
          ||   ||||| | |||||||| |||||||| | | |||||  |   ||||  || |  ||
Db  76798 TCAAACTCAATCCGACCGACACCCGCAGCATCCGGCAACGCATATCCGACAATTACAGCA 76739

Qy    572 ataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccgataca 631
          |   ||| || |   |  |  |  | |  |  || |    || |        |   |||
Db  76738 ACCTCGGCAGCAATTTCTCCGACCGCGCCGATGAAGCCAACAGAAAAATGTTCGAGCACA 76679

Qy    632 gccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagatatcg 691
          || |||| ||| | | ||||||   |   ||   | ||||||||   || |    ||
Db  76678 ATGCCAAGCTCGACCGCTGGGGCAACAGCATGGAGTTTATCAACGGCGTCGCCGCCGGCG 76619

Qy    692 tcaaaaacatcatcggcgcggcaggagaaattgtcggcgcaggcgatgccgtgcagggta 751
          |||  | |  |  || || |||    | |||  ||||||     || | || |
Db  76618 CGCTCAACCCCTTTATCAGCGCGGGCGAAGCCTTGGGCATAGGCGACATACTGTACGGAA 76559

Qy    752 taagcgaaggctcaaacattgctgttatgcacggcttgggtctgctttccaccgaaaaca 811
          || | |  | |||  || |  |||| |  | | |  |   |  || ||||   ||
Db  76558 CGCGCTATGCCATAGACAAAGCCGCAATGCGCAACATCGCCCCCTTGCCCGCCGAGGGCA 76499

Qy    812 agatggcgcgcatcaacgatttggcagatatggcgcaactcaaagactatgccgcagcag 871
          |  | ||   |||| ||  ||||      |||||    |  || |  || |    | ||
Db  76498 AATTCGCCGTCATCGGCGGCTTGGGCAGCGTGGCGGGCTTTGAAAAGAATACGCGCGAAG 76439

Qy    872 ccatccgcgattgggcagtccaaaaccccaatgccgcacaaggcatagaagccgtcagca 931
          || |   |   |||  |    |||| ||||||||||| ||  | | |||||||||  ||
Db  76438 CCGTTGACCGGTGGATACAGGAAAATCCCAATGCCGCCGAAACCGTCGAAGCCGTCTTCA 76379

Qy    932 atatctttacggcagtcatccccgtcaa 959
          |  |     | |||| ||    ||  ||
Db  76378 ACGTTGCCGCAGCAGCCAAAGTCGCGAA 76351
```

RESULT 32
AAZ54262
ID AAZ54262 standard; DNA; 1497 BP.
XX
AC AAZ54262;
XX
DT 21-MAR-2000 (first entry)
XX
DE Neisseria meningitidis ORF 730 partial DNA sequence SEQ ID NO:2473.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW antibacterial; gene therapy; ds.
XX
OS Neisseria meningitidis.
XX
PN WO9957280-A2.
XX
PD 11-NOV-1999.
XX
PF 30-APR-1999; 99WO-US09346.
XX
PR 01-MAY-1998; 98US-0083758.
PR 31-JUL-1998; 98US-0094869.
PR 02-SEP-1998; 98US-0098994.
PR 02-SEP-1998; 98US-0099062.
PR 09-OCT-1998; 98US-0103749.
PR 09-OCT-1998; 98US-0103794.
PR 09-OCT-1998; 98US-0103796.
PR 25-FEB-1999; 99US-0121528.
XX
PA (CHIR) CHIRON CORP.
PA (GENO-) INST GENOMIC RES.
XX
PI Fraser C, Galeotti C, Grandi G, Hickey E, Masignani V, Mora M;
PI Petersen J, Pizza M, Rappuoli R, Ratti G, Scalato E, Scarselli M;
PI Tettelin H, Venter JC;
XX
DR WPI; 2000-062150/05.
DR P-PSDB; AAY75500.
XX
PT Novel Neisserial polypeptides predicted to be useful antigens for
PT vaccines and diagnostics -
XX
PS Claim 7; Page 1183; 1453pp; English.
XX
CC AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC PCR primers used in the exemplification of the present invention. The
CC polypeptides, the polynucleotides, antibodies and compositions of
CC the invention can be used as vaccines, as diagnostic reagents, and as
CC immunogenic compositions. The polypeptides can be used in the
CC manufacture of medicaments for treating or preventing infection due to
CC Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC presence of Neisseria bacteria, or to raise antibodies. They may also
CC be used to screen for agonists or antagonists, which may themselves
CC have use as antibacterial agents. The polynucleotides of the invention
CC may also be used in gene therapy protocols.
XX
SQ Sequence 1497 BP; 456 A; 431 C; 354 G; 256 T; 0 other;

Query Match 17.1%; Score 286; DB 21; Length 1497;
Best Local Similarity 57.7%; Pred. No. 1e-77;
Matches 530; Conservative 0; Mismatches 385; Indels 3; Gaps 1;

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Qy     35 ccatactggcagtgtgcctgccgatgcatgcacacgcctcagatttggcaaacgattctt 94
          || ||  ||| |    ||      ||  || | |||  | || |||||  | ||  | |
Db     44 ccgtagcggcggccgcactcatacagcccgccctcgcggcggacttggcgcaagacccgt 103

Qy     95 ttatccggcaggttctcgaccgtcagcatttcgaacccgacgggaaataccacctattcg 154
          | ||     |      | | || ||||| | ||||||||  || ||||||||||| ||||
Db    104 tcattaccgataacgcccaacggcagcactacgaacccggaggcaaataccacctcttcg 163

Qy    155 gcagcagggggggaacttg---ccgagcgcagcggtcatatcggattgggaaacatacaaa 211
          ||  |  | | |     |   |||| |||| |||||| |||    |     |     | |
Db    164 gcgacccgcgcggcagcgtctccgaccgcaccggtcaaatcaacgtcatccaagactata 223

Qy    212 gccatcagttgggcaacctgttcatccagcaggcggccattaaaggaaatatcggctaca 271
          ||| | | ||||||||||| ||||||||||||   ||| || || |  |||||||||
Db    224 cccaccggatgggcaacctgctcatccagcaggcaaacatcaacggcacaatcggctacc 283

Qy    272 ttgtccgcttttccgatcacgggcacgaagtccattcccccttcgacaaccatgcctcac 331
          ||||||||||  |||||  ||||||  ||  ||||||||||||||||| ||| |
Db    284 acacccgcttttccggacacggatacgaagaacacgcccccttcgacaaccacgccgccg 343

Qy    332 attccgattctgatgaagccggtagtcccgttgacggattcagcctttaccgcatccatt 391
          |   ||     || |||   || |     |  || || || | | | ||||| || | |
Db    344 acagcgcgagcgaagaaaaaggcaacgttgacgaaggctttaccgtataccggctcaact 403

Qy    392 gggacggatacgaacaccatcccgccgacggctatgacgggccacagggcggcggctatc 451
          |||| ||| ||||||| |||||||||| | ||| ||||| ||  |||||||||   || |
Db    404 gggaaggacacgaacatcatcccgccgatgcctacgacggcccgaagggcggcaattacc 463

Qy    452 ccgctcccaaaggcgcgagggatatatacagctacgacataaaaggcgttgcccaaaata 511
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Db    464 ccaaacctacgggtgcacgcgacgaatacacctatcacgtcaacggcacagtacgcagca 523

Qy    512 tccgcctcaacctgaccgacaaccgcagcaccggacaacggcttgtcgaccgtttccaca 571

Db    524 tcaaactcaatccgaccgacacccgcagcatccggcaacgcatatccgacaattacagca 583

Qy    572 ataccggtagtatgctgacgcaaggagtaggcgacggattcaaacgcgccacccgataca 631

Db    584 acctcggcagcaatttctccgaccgcgccgatgaagccaacagaaaaatgttcgagcaca 643

Qy    632 gccccgagctggacagatcgggcaatgccgccgaagctttcaacggcactgcagatatcg 691

Db    644 atgccaagctcgaccgctggggcaacagcatggagtttatcaacggcgtcgccgccggcg 703

Qy    692 tcaaaaacatcatcggcgcggcaggagaaattgtcggcgcaggcgatgccgtgcagggta 751

Db    704 cgctcaacccctttatcagcgcgggcgaagccttgggcataggcgacatactgtacggaa 763

Qy    752 taagcgaaggctcaaacattgctgttatgcacggcttgggtctgctttccaccgaaaaca 811

Db    764 cgcgctatgccatagacaaagccgcaatgcgcaacatcgccccttgcccgccgagggca 823

Qy    812 agatggcgcgcatcaacgatttggcagatatggcgcaactcaaagactatgccgcagcag 871

Db    824 aattcgccgtcatcggcggcttgggcagcgtggcgggctttgaaaaaaatacgcgcgaag 883

Qy    872 ccatccgcgattgggcagtccaaaaccccaatgccgcacaaggcatagaagccgtcagca 931

Db    884 ccgttgaccggtggatacaggaaaaccccaatgccgccgaaaccgtcgaagccctggtca 943

Qy    932 atatctttacggcagtca 949

Db    944 acgtcctgccgtttgcca 961
```

RESULT 33
AAZ12046
ID AAZ12046 standard; DNA; 1497 BP.
XX
AC AAZ12046;
XX
DT 08-OCT-1999 (first entry)
XX
DE Neisseria gonorrhoeae complete ORF29 sequence.
XX
KW Neisseria meningitidis; Neisseria gonorrhoeae; antigen; vaccine;
KW treatment; Neisseria infection; meningitis; septicaemia; gonorrhea; ss.
XX
OS Neisseria gonorrhoeae.
XX
PN WO9924578-A2.
XX
PD 20-MAY-1999.
XX
PF 09-OCT-1998; 98WO-IB01665.
XX
PR 01-SEP-1998; 98GB-0019016.
PR 06-NOV-1997; 97GB-0023516.
PR 14-NOV-1997; 97GB-0024190.
PR 18-NOV-1997; 97GB-0024386.
PR 27-NOV-1997; 97GB-0025158.
PR 10-DEC-1997; 97GB-0026147.
PR 14-JAN-1998; 98GB-0000759.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Grandi G, Masignani V, Pizza M, Rappuoli R, Scarlato V;
XX
DR WPI; 1999-327407/27.
DR P-PSDB; AAY38584.
XX
PT Proteins from Neisseria meningitidis and N. gonorrhoeae useful for
PT diagnosis, treatment and prevention of infection
XX
PS Claim 9; Page 146; 524pp; English.
XX
CC Nucleotide sequences AAZ11972-Z12358 represent open reading frames
CC (ORFs) of Neisseria meningitidis and N. gonorrhoeae which encode
CC antigenic proteins (see AAY38499-Y38944). The antigenic proteins, their
CC fragments, their nucleic acids and antibodies are used for diagnosis,
CC prevention (as vaccines) or treatment of Neisseria infections,
CC such as meningitis, septicaemia and gonorrhea. Both organisms
CC are closely related. Fragments of the nucleic acids are useful
CC as hybridisation probes and antisense reagents.
XX
SQ Sequence 1497 BP; 475 A; 319 C; 365 G; 338 T; 0 other;

Query Match 7.3%; Score 121.8; DB 20; Length 1497;
Best Local Similarity 66.7%; Pred. No. 8e-27;
Matches 174; Conservative 0; Mismatches 87; Indels 0; Gaps 0;

```
Qy    237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296

Db    243 cgaacggacaggatttgaaggtgttatcggctatgaaacccatttttcaggacacggaca 302

Qy    297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356

Db    303 cgaagtacacagtccgttcgataatcatgattcaaaaagcacttctgatttcagcggcgg 362

Qy    357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416

Db    363 cgtagacggcggttttaccgtttaccaacttcatcggacagggtcggaaatacatcccgc 422

Qy    417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476

Db    423 agacggatatgacgggcctcaaggcggcggttatccggaaccacaaggggcaagggatat 482

Qy    477 atacagctacgacataaaagg 497

Db    483 atacagctaccatatcaaagg 503
```

RESULT 34
AAZ53469
ID AAZ53469 standard; DNA; 1497 BP.
XX
AC AAZ53469;
XX
DT 21-MAR-2000 (first entry)
XX
DE Neisseria gonorrheae ORF 238 partial DNA sequence SEQ ID NO:887.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW antibacterial; gene therapy; ds.
XX
OS Neisseria gonorrheae.
XX
PN WO9957280-A2.
XX
PD 11-NOV-1999.
XX
PF 30-APR-1999; 99WO-US09346.
XX
PR 01-MAY-1998; 98US-0083758.
PR 31-JUL-1998; 98US-0094869.
PR 02-SEP-1998; 98US-0098994.
PR 02-SEP-1998; 98US-0099062.
PR 09-OCT-1998; 98US-0103749.
PR 09-OCT-1998; 98US-0103794.
PR 09-OCT-1998; 98US-0103796.
PR 25-FEB-1999; 99US-0121528.
XX
PA (CHIR) CHIRON CORP.

```
PA   (GENO-) INST GENOMIC RES.
XX
PI   Fraser C,  Galeotti C,  Grandi G,  Hickey E,  Masignani V,  Mora M;
PI   Petersen J,  Pizza M,  Rappuoli R,  Ratti G,  Scalato E,  Scarselli M;
PI   Tettelin H,  Venter JC;
XX
DR   WPI; 2000-062150/05.
DR   P-PSDB; AAY74707.
XX
PT   Novel Neisserial polypeptides predicted to be useful antigens for
PT   vaccines and diagnostics -
XX
PS   Claim 7; Page 543-544; 1453pp; English.
XX
CC   AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC   represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC   and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC   PCR primers used in the exemplification of the present invention. The
CC   polypeptides, the polynucleotides, antibodies and compositions of
CC   the invention can be used as vaccines, as diagnostic reagents, and as
CC   immunogenic compositions. The polypeptides can be used in the
CC   manufacture of medicaments for treating or preventing infection due to
CC   Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC   presence of Neisseria bacteria, or to raise antibodies. They may also
CC   be used to screen for agonists or antagonists, which may themselves
CC   have use as antibacterial agents. The polynucleotides of the invention
CC   may also be used in gene therapy protocols.
XX
SQ   Sequence 1497 BP; 475 A; 319 C; 365 G; 338 T; 0 other;
```

```
  Query Match             7.3%;  Score 121.8;  DB 21;  Length 1497;
  Best Local Similarity   66.7%;  Pred. No. 8e-27;
  Matches  174;  Conservative    0;  Mismatches   87;  Indels    0;  Gaps    0;

Qy     237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
           | | | | | |   || ||||   |||||||||      ||  ||||| |  ||||| ||
Db     243 cgaacggacaggatttgaaggtgttatcggctatgaaacccatttttcaggacacggaca 302

Qy     297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
           ||||||  ||    || ||||| || ||||  |||  |   |  |||||||     |||  |
Db     303 cgaagtacacagtccgttcgataatcatgattcaaaaagcacttctgatttcagcggcgg 362

Qy     357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
             |  | ||| || | | ||||||   | ||| ||   || |  |||   ||||||||
Db     363 cgtagacggcggttttaccgtttaccaacttcatcggacagggtcggaaatacatcccgc 422

Qy     417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
           |||||  |||||||||||  || ||||||||  |||||  |  ||  |||| || ||||||||
Db     423 agacggatatgacgggcctcaaggcggcggttatccggaaccacaaggggcaagggatat 482

Qy     477 atacagctacgacataaaagg 497
           ||||||||||  | || |||||
Db     483 atacagctaccatatcaaagg 503
```

```
RESULT  35
AAT70386
ID   AAT70386 standard; DNA; 3287 BP.
XX
AC   AAT70386;
XX
DT   08-DEC-1997  (first entry)
XX
DE   Neisseria adhesion proteins.
XX
KW   Neisseria gonorrhoea; adhesion; lipoprotein; OrfA; OrfI; OrfB; ss.
XX
OS   Neisseria gonorrhoeae.
XX
FH   Key             Location/Qualifiers
FT   -35_signal      63..68
FT                   /*tag=  a
FT   -10_signal      78..83
FT                   /*tag=  b
FT   RBS             124..128
FT                   /*tag=  c
FT   CDS             136..449
FT                   /*tag=  d
FT                   /label= OrfA
FT   -35_signal      514..519
FT                   /*tag=  e
FT   -10_signal      534..539
FT                   /*tag=  f
FT   RBS             571..577
FT                   /*tag=  g
FT   CDS             583..1545
FT                   /*tag=  h
FT                   /label= OrfI
FT   RBS             1573..1579
FT                   /*tag=  i
FT   CDS             1585..3114
FT                   /*tag=  j
FT                   /label= OrfB
XX
PN   DE19534579-A1.
XX
PD   20-MAR-1997.
XX
PF   18-SEP-1995;   95DE-1034579.
XX
PR   18-SEP-1995;   95DE-1034579.
XX
PA   (PLAC ) MAX PLANCK GES FOERDERUNG WISSENSCHAFTEN.
XX
PI   Fischer E,  Maier J,  Meyer TF,  Rudel T,  Scheuerpflug I;
XX
DR   WPI; 1997-180942/17.
DR   P-PSDB; AAW18784, AAW18785, AAW18786.
XX
PT   Nucleic acids encoding Neisseria adhesion proteins - for therapeutic
PT   and diagnostic use
XX
PS   Claim 1; Page 11-13; 20pp; German.
XX
CC   OrfA and OrfB in complexes with the protein PilC are capable of
CC   adhering to human cells.
CC   Products obtained from the DNA are useful in medicaments,
CC   diagnostic compsns. and vaccines, esp. for treatment of
CC   Neisseria gonorrhoea and N. meningitidis infections.
XX
SQ   Sequence 3287 BP; 1016 A; 741 C; 752 G; 778 T; 0 other;
```

```
  Query Match             7.3%;  Score 121.8;  DB 18;  Length 3287;
  Best Local Similarity   66.7%;  Pred. No. 1.3e-26;
  Matches  174;  Conservative    0;  Mismatches   87;  Indels    0;  Gaps    0;

Qy     237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
           | | | | | |   || ||||  | ||||||  ||      ||  |||||  |  ||||| ||
Db    1827 cgaacggacagggtttgaaggcattatcggttatgaaacccatttttcaggacacggaca 1886

Qy     297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
           ||||||  ||    ||  ||||| || ||||  |||  |   |  |||||||     |||  |
Db    1887 cgaagtacacagtccgttcgataatcatgattcaaaaagcacttctgatttcagcggcgg 1946

Qy     357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
             |  | ||| || | | ||||||   | ||| ||   || |  |||   ||||||||
Db    1947 cgtagacggcggttttaccgtttaccaacttcatcggacagggtcggaaatacatcccgc 2006

Qy     417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
           |||||  |||||||||||  || ||||||||  |||||  |  ||  |||| || ||||||||
Db    2007 agacggatatgacgggcctcaaggcggcggttatccggaaccacaaggggcaagggatat 2066

Qy     477 atacagctacgacataaaagg 497
           ||||||||||  | || |||||
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Db   2067 atacagctaccatatcaaagg 2087


RESULT 36
AAZ53471
ID   AAZ53471 standard; DNA; 1155 BP.
XX
AC   AAZ53471;
XX
DT   21-MAR-2000  (first entry)
XX
DE   Neisseria meningitidis ORF 238 partial DNA sequence SEQ ID NO:891.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW   antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW   antibacterial; gene therapy; ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO9957280-A2.
XX
PD   11-NOV-1999.
XX
PF   30-APR-1999;   99WO-US09346.
XX
PR   01-MAY-1998;   98US-0083758.
PR   31-JUL-1998;   98US-0094869.
PR   02-SEP-1998;   98US-0098994.
PR   02-SEP-1998;   98US-0099062.
PR   09-OCT-1998;   98US-0103749.
PR   09-OCT-1998;   98US-0103794.
PR   09-OCT-1998;   98US-0103796.
PR   25-FEB-1999;   99US-0121528.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Fraser C,  Galeotti C,  Grandi G,  Hickey E,  Masignani V,  Mora M;
PI   Petersen J,  Pizza M,  Rappuoli R,  Ratti G,  Scalato E,  Scarselli M;
PI   Tettelin H,  Venter JC;
XX
DR   WPI; 2000-062150/05.
DR   P-PSDB; AAY74709.
XX
PT   Novel Neisserial polypeptides predicted to be useful antigens for
PT   vaccines and diagnostics -
XX
PS   Claim 7; Page 546; 1453pp; English.
XX
CC   AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC   represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC   and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC   PCR primers used in the exemplification of the present invention. The
CC   polypeptides, the polynucleotides, antibodies and compositions of
CC   the invention can be used as vaccines, as diagnostic reagents, and as
CC   immunogenic compositions. The polypeptides can be used in the
CC   manufacture of medicaments for treating or preventing infection due to
CC   Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC   presence of Neisseria bacteria, or to raise antibodies. They may also
CC   be used to screen for agonists or antagonists, which may themselves
CC   have use as antibacterial agents. The polynucleotides of the invention
CC   may also be used in gene therapy protocols.
XX
SQ   Sequence 1155 BP; 338 A; 267 C; 282 G; 268 T; 0 other;


  Query Match             6.6%;  Score 110.2;  DB 21;  Length 1155;
  Best Local Similarity   62.5%;  Pred. No. 2.7e-23;
  Matches  172;  Conservative    0;  Mismatches  103;  Indels    0;  Gaps    0;

Qy    237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
          | | | | | |   || |||| | |||||| ||      ||  ||||| |  || || ||
Db    243 cgaacggacaggatttgaaggcattatcggttatgaaacccatttttcaggacatggaca 302

Qy    297 cgaagtccattccccctttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
          |||||  ||    ||  |||||  ||  ||||  |||  |    |  |||||||     |||  |
Db    303 tgaagtacacagtccgttcgataatcatgattcaaaaagcacttctgatttcagcggcgg 362

Qy    357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
              |  |  ||  ||  |  |  ||||||    |  |||  ||   ||  |  |||  |||||| |
Db    363 cgtagacggtggttttaccgtttaccaacttcatcggacagggtcggaaatccatccgga 422

Qy    417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
          ||  ||  ||||||||||||  ||  |||  |||  |||||  |  |||  |||  ||  |||||||||
Db    423 ggatggatatgacgggccgcaaggcagcgattatccgccccccggaggagcaagggatat 482

Qy    477 atacagctacgacataaaaggcgttgcccaaaata 511
          ||||||||||  |  |  |||||   |  |   |||  |
Db    483 atacagctactatgtcaaaggaacttcaacaaaaa 517


RESULT 37
AAZ12045
ID   AAZ12045 standard; DNA; 1449 BP.
XX
AC   AAZ12045;
XX
DT   08-OCT-1999  (first entry)
XX
DE   Neisseria meningitidis strain A complete ORF29 sequence.
XX
KW   Neisseria meningitidis; Neisseria gonorrhoeae; antigen; vaccine;
KW   treatment; Neisseria infection; meningitis; septicaemia; gonorrhea; ss.
XX
OS   Neisseria meningitidis.
XX
PN   WO9924578-A2.
XX
PD   20-MAY-1999.
XX
PF   09-OCT-1998;   98WO-IB01665.
XX
PR   01-SEP-1998;   98GB-0019016.
PR   06-NOV-1997;   97GB-0023516.
PR   14-NOV-1997;   97GB-0024190.
PR   18-NOV-1997;   97GB-0024386.
PR   27-NOV-1997;   97GB-0025158.
PR   10-DEC-1997;   97GB-0026147.
PR   14-JAN-1998;   98GB-0000759.
XX
PA   (CHIR-) CHIRON SPA.
XX
PI   Grandi G,  Masignani V,  Pizza M,  Rappuoli R,  Scarlato V;
XX
DR   WPI; 1999-327407/27.
DR   P-PSDB; AAY38582.
XX
PT   Proteins from Neisseria meningitidis and N. gonorrhoeae useful for
PT   diagnosis, treatment and prevention of infection
XX
PS   Claim 9; Page 144-145; 524pp; English.
XX
CC   Nucleotide sequences AAZ11972-Z12358 represent open reading frames
CC   (ORFs) of Neisseria meningitidis and N. gonorrhoeae which encode
CC   antigenic proteins (see AAY38499-Y38944). The antigenic proteins, their
CC   fragments, their nucleic acids and antibodies are used for diagnosis,
CC   prevention (as vaccines) or treatment of Neisseria infections,
CC   such as meningitis, septicaemia and gonorrhea. Both organisms
CC   are closely related. Fragments of the nucleic acids are useful
CC   as hybridisation probes and antisense reagents.
XX
SQ   Sequence 1449 BP; 445 A; 310 C; 335 G; 340 T; 19 other;


  Query Match             6.4%;  Score 107.2;  DB 20;  Length 1449;
  Best Local Similarity   61.5%;  Pred. No. 2.6e-22;
```

```
  Matches  169;  Conservative    0;  Mismatches  106;  Indels    0;  Gaps    0;

Qy     237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
           | | | | | |   || |||| | ||||||| ||       ||  |||||  |  || || ||
Db     243 cgaacggacaggatttgaaggcattatcggttatgaaacccatttttcaggacatggaca 302

Qy     297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
           |||||  ||     || |||||  || ||||  |||  |    |  |||||||      |||  |
Db     303 tgaagtacacagtccgttcgataatcatgattcaaaaagcacttctgatttcagcggcgg 362

Qy     357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
           |  |  || || | | |||||||   | ||| ||   || |  |||  ||||||| |
Db     363 cgtagacggtggttttaccgtttaccaacttcatcggacagggtcggaaatccatccgga 422

Qy     417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
           || || ||||||||||| || ||| |||  |||||  | |||  ||| || ||||||||
Db     423 ggatggatatgacgggccgcaaggcagcgattatccgccccccggaggagcaagggatat 482

Qy     477 atacagctacgacataaaaggcgttgcccaaaata 511
           |||||  ||  |  | |||||   | |   ||| |
Db     483 atacanntantatgtcaaaggaacttcaacaaaaa 517


RESULT  38
AAZ12044
ID   AAZ12044 standard; DNA; 1452 BP.
XX
AC   AAZ12044;
XX
DT   08-OCT-1999  (first entry)
XX
DE   Neisseria meningitidis complete ORF29 sequence.
XX
KW   Neisseria meningitidis; Neisseria gonorrhoeae; antigen; vaccine;
KW   treatment; Neisseria infection; meningitis; septicaemia; gonorrhea; ss.
XX
OS   Neisseria meningitidis.
XX
PN   WO9924578-A2.
XX
PD   20-MAY-1999.
XX
PF   09-OCT-1998;   98WO-IB01665.
XX
PR   01-SEP-1998;   98GB-0019016.
PR   06-NOV-1997;   97GB-0023516.
PR   14-NOV-1997;   97GB-0024190.
PR   18-NOV-1997;   97GB-0024386.
PR   27-NOV-1997;   97GB-0025158.
PR   10-DEC-1997;   97GB-0026147.
PR   14-JAN-1998;   98GB-0000759.
XX
PA   (CHIR-) CHIRON SPA.
XX
PI   Grandi G,  Masignani V,  Pizza M,  Rappuoli R,  Scarlato V;
XX
DR   WPI; 1999-327407/27.
DR   P-PSDB; AAY38581.
XX
PT   Proteins from Neisseria meningitidis and N. gonorrhoeae useful for
PT   diagnosis, treatment and prevention of infection
XX
PS   Claim 9; Page 143-144; 524pp; English.
XX
CC   Nucleotide sequences AAZ11972-Z12358 represent open reading frames
CC   (ORFs) of Neisseria meningitidis and N. gonorrhoeae which encode
CC   antigenic proteins (see AAY38499-Y38944). The antigenic proteins, their
CC   fragments, their nucleic acids and antibodies are used for diagnosis,
CC   prevention (as vaccines) or treatment of Neisseria infections,
CC   such as meningitis, septicaemia and gonorrhea. Both organisms
CC   are closely related. Fragments of the nucleic acids are useful
CC   as hybridisation probes and antisense reagents.
XX
SQ   Sequence 1452 BP; 466 A; 298 C; 332 G; 356 T; 0 other;

  Query Match              6.4%;  Score 107;  DB 20;  Length 1452;
  Best Local Similarity   61.8%;  Pred. No. 3e-22;
  Matches  170;  Conservative    0;  Mismatches  105;  Indels    0;  Gaps    0;

Qy     237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
           | | | | | |   || ||||   |||||| ||       ||  |||||  |  ||||| ||
Db     243 cgaacggacagggtttgaaggtgttatcggttatgaaacccatttttcagggcacggaca 302

Qy     297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
           |||||  ||     || |||||  | ||||  |||  |    |  |||||||      |||  |
Db     303 tgaagtacacagtccgttcgatcatcatgattcaaaaagcacttctgatttcagcggcgg 362

Qy     357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
           |   |  | |||  || |   ||||||   | |||  |    || |  |||  |||||| |
Db     363 tgtagacggcggttttactgtttaccaacttcatcgaacagggtcggaaatccatccgga 422

Qy     417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
           || || ||||||||||| || ||| |||  |||||  | |||  ||| || ||||||||
Db     423 ggatggatatgacgggccgcaaggcagcgattatccgccccccggaggagcaagggatat 482

Qy     477 atacagctacgacataaaaggcgttgcccaaaata 511
           |||||||||  |  | |||||   | |   ||| |
Db     483 atacagctattatgtcaaaggaacttcaacaaaaa 517


RESULT  39
AAZ53470
ID   AAZ53470 standard; DNA; 1452 BP.
XX
AC   AAZ53470;
XX
DT   21-MAR-2000  (first entry)
XX
DE   Neisseria meningitidis ORF 238 partial DNA sequence SEQ ID NO:889.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; antigen; vaccine;
KW   antigenic; diagnosis; immunogenic; infection; meningitis; septicaemia;
KW   antibacterial; gene therapy; ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO9957280-A2.
XX
PD   11-NOV-1999.
XX
PF   30-APR-1999;   99WO-US09346.
XX
PR   01-MAY-1998;   98US-0083758.
PR   31-JUL-1998;   98US-0094869.
PR   02-SEP-1998;   98US-0098994.
PR   02-SEP-1998;   98US-0099062.
PR   09-OCT-1998;   98US-0103749.
PR   09-OCT-1998;   98US-0103794.
PR   09-OCT-1998;   98US-0103796.
PR   25-FEB-1999;   99US-0121528.
XX
PA   (CHIR ) CHIRON CORP.
PA   (GENO-) INST GENOMIC RES.
XX
PI   Fraser C,  Galeotti C,  Grandi G,  Hickey E,  Masignani V,  Mora M;
PI   Petersen J,  Pizza M,  Rappuoli R,  Ratti G,  Scalato E,  Scarselli M;
PI   Tettelin H,  Venter JC;
XX
DR   WPI; 2000-062150/05.
DR   P-PSDB; AAY74708.
XX
PT   Novel Neisserial polypeptides predicted to be useful antigens for
PT   vaccines and diagnostics
XX
PS   Claim 7; Page 544; 1453pp; English.
```

```
XX
CC   AAZ53015 to AAZ54536, AAZ54577 to AAZ54615, and AAY74253 to AAY75941
CC   represent novel Neisseria meningitis and N. gonorrheae polynucleotides
CC   and polypeptides. AAZ54537 to AAZ54576 and AAZ54616 to AAZ55473 represent
CC   PCR primers used in the exemplification of the present invention. The
CC   polypeptides, the polynucleotides, antibodies and compositions of
CC   the invention can be used as vaccines, as diagnostic reagents, and as
CC   immunogenic compositions. The polypeptides can be used in the
CC   manufacture of medicaments for treating or preventing infection due to
CC   Neisserial bacteria (e.g. meningitis and septicaemia), to detect the
CC   presence of Neisseria bacteria, or to raise antibodies. They may also
CC   be used to screen for agonists or antagonists, which may themselves
CC   have use as antibacterial agents. The polynucleotides of the invention
CC   may also be used in gene therapy protocols.
XX
SQ   Sequence 1452 BP; 466 A; 298 C; 332 G; 356 T; 0 other;

  Query Match             6.4%;  Score 107;  DB 21;  Length 1452;
  Best Local Similarity   61.8%;  Pred. No. 3e-22;
  Matches  170;  Conservative    0;  Mismatches  105;  Indels    0;  Gaps    0;

Qy     237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
           | | | | | |   || |||   ||||||  ||      ||  |||||  |  |||||  ||
Db     243 cgaacggacagggtttgaaggtgttatcggttatgaaacccatttttcagggcacggaca 302

Qy     297 cgaagtccattccccctcgacaaccatgcctcacattccgattctgatgaagccggtag 356
           |||||  ||    ||  |||||  |  ||||  |||  |   |  |||||||     |||  |
Db     303 tgaagtacacagtccgttcgatcatcatgattcaaaaagcacttctgatttcagcggcgg 362

Qy     357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
           |   |  | |||  ||  |   ||||||   | |||  |    ||  |  |||  ||||||  |
Db     363 tgtagacggcggttttactgtttaccaacttcatcgaacagggtcggaaatccatccgga 422

Qy     417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
           ||  ||  ||||||||||||  ||  |||  |||  |||||  |  |||  |||  ||  ||||||||
Db     423 ggatggatatgacgggccgcaaggcagcgattatccgccccccggaggagcaagggatat 482

Qy     477 atacagctacgacataaaaggcgttgcccaaaata 511
           |||||||||  |  | |||||   | |   |||  |
Db     483 atacagctattatgtcaaaggaacttcaacaaaaa 517


RESULT  40
AAA81473
ID   AAA81473 standard; DNA; 92934 BP.
XX
AC   AAA81473;
XX
DT   04-DEC-2000  (first entry)
XX
DE   N. meningitidis partial DNA sequence gnm_21 SEQ ID NO:21.
XX
KW   Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
KW   antigen; vaccine; diagnosis; infection; antibacterial; identification;
KW   Meningococcus B; MenB; ds.
XX
OS   Neisseria meningitidis.
XX
PN   WO200022430-A2.
XX
PD   20-APR-2000.
XX
PF   08-OCT-1999;   99WO-US23573.
XX
PR   09-OCT-1998;   98US-0103794.
PR   30-APR-1999;   99US-0132068.
XX
PA   (CHIR ) CHIRON CORP.
XX
PI   Frazer CM,  Hickey E,  Peterson J,  Tettelin H,  Venter JC;
PI   Masignani V,  Galeotti C,  Mora M,  Ratti G,  Scarselli M,  Scarlato V;
PI   Rappuoli R,  Pizza M;
XX
DR   WPI; 2000-318079/27.
XX
PT   Isolated nucleotide sequences of Neisseria meningitidis which can be
PT   used in the diagnosis and treatment of N. meningitidis infection and
PT   other Neisserial infections, for example, N.gonorrhoea -
XX
PS   Claim 7; Page 471-498; 1760pp; English.
XX
CC   The present invention describes methods of obtaining immunogenic
CC   proteins from Neisseria genomic sequences. AAA81453 to AAA82414
CC   represent specifically claimed Neisseria meningitidis genomic DNA
CC   sequences; AAA81260 to AAA81303 and AAB25620 to AAB25663 represent
CC   Neisseria DNA sequences and their corresponding proteins; AAA81254 to
CC   AAA81259 and AAA81304 to AAA81321 represent PCR primers used in the
CC   isolation of Neisseria meningitidis DNA sequences; and AAA81322 to
CC   AAA81452 represent Neisseria meningitidis MenB polynucleotide ORF
CC   sequences, which are all used in the exemplification of the present
CC   invention. The nucleic acid sequences, protein sequences, and antibodies
CC   against them, can be used in the manufacture of a composition. The
CC   composition can be used as a medicament (or in the manufacture of a
CC   medicament) for treating, preventing or diagnosing infection due to
CC   Neisserial bacteria. For example, some of the identified proteins could
CC   be components of vaccines against Meningococcus B; against all serotypes;
CC   and/or against all pathogenic Neissariae. Identification of sequences
CC   from the bacterium will also facilitate production of biological probes,
CC   particularly organism-specific probes. Attempts to make efficacious
CC   Meningococcus B vaccines have failed mainly due to antigen tolerance.
CC   Multivalent vaccines have also been tried but none have successfully
CC   overcome antigenic variability. The provision of further, complete
CC   sequences may provide an opportunity to identify secreted or surface
CC   exposed proteins that may be presumed targets for the immune system and
CC   which are not antigenically variable or at least more conserved than
CC   other more variable regions.
XX
SQ   Sequence 92934 BP; 24051 A; 24249 C; 21902 G; 22730 T; 2 other;

  Query Match             6.4%;  Score 107;  DB 21;  Length 92934;
  Best Local Similarity   61.8%;  Pred. No. 3.9e-21;
  Matches  170;  Conservative    0;  Mismatches  105;  Indels    0;  Gaps    0;

Qy     237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
           | | | | | |   || ||||   ||||||  ||      ||  |||||  |  |||||  ||
Db   19270 cgaacggacagggtttgaaggtgttatcggttatgaaacccatttttcagggcacggaca 19329

Qy     297 cgaagtccattccccctcgacaaccatgcctcacattccgattctgatgaagccggtag 356
           |||||  ||    ||  |||||  |  ||||  |||  |   |  |||||||     |||  |
Db   19330 tgaagtacacagtccgttcgatcatcatgattcaaaaagcacttctgatttcagcggcgg 19389

Qy     357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
           |   |  | |||  ||  |   ||||||   | |||  |    ||  |  |||  ||||||  |
Db   19390 tgtagacggcggttttactgtttaccaacttcatcgaacagggtcggaaatccatccgga 19449

Qy     417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
           ||  ||  ||||||||||||  ||  |||  |||  |||||  |  |||  |||  ||  ||||||||
Db   19450 ggatggatatgacgggccgcaaggcagcgattatccgccccccggaggagcaagggatat 19509

Qy     477 atacagctacgacataaaaggcgttgcccaaaata 511
           |||||||||  |  | |||||   | |   |||  |
Db   19510 atacagctattatgtcaaaggaacttcaacaaaaa 19544


RESULT  41
AAF21613
ID   AAF21613 standard; DNA; 172325 BP.
XX
AC   AAF21613;
XX
DT   13-MAR-2001  (first entry)
XX
DE   Neisseria meningitidis B nucleotide sequence SEQ ID NO:114.
XX
```

KW Neisseria meningitidis; Neisseria gonorrheae; immunogenic; vaccine;
KW diagnosis; antigen; detection; infection; gene therapy; antibacterial;
KW ds.
XX
OS Neisseria meningitidis.
XX
PN WO200066791-A1.
XX
PD 09-NOV-2000.
XX
PF 08-MAR-2000; 2000WO-US05928.
XX
PR 30-APR-1999; 99US-0132068.
PR 08-OCT-1999; 99WO-US23573.
PR 28-FEB-2000; 2000GB-0004695.
XX
PA (CHIR) CHIRON CORP.
PA (GENO-) INST GENOMIC RES.
XX
PI Pizza M, Hickey E, Peterson J, Tettelin H, Venter JC, Masignani V;
PI Galeotti C, Mora M, Ratti G, Scarselli M, Scarlato V, Rappuoli R;
PI Frazer CM, Grandi G;
XX
DR WPI; 2000-647603/62.
XX
PT Neisseria meningitidis B full length genome sequence and open reading
PT frames are used to detect, treat and prevent Neisserial infections -
XX
PS Claim 7; Appendix A; 692pp; English.
XX
CC The present invention describes the full length genome of
CC Neisseria meningitidis B (NMB). The sequences in AAF21544 and AAF21607
CC to AAF21613 represent fragments of the NMB genomic sequence, as the
CC sequence was too long to go in a record on its own it was split into 8
CC sequences which overlap each other at the beginning and end of each
CC sequence by 49980 bp (i.e. the last 49980 bp of AAF21544 is repeated at
CC the beginning of AAF21607, the last 49980 bp of AAF21607 are repeated at
CC the beginning of AAF21608, and so on). AAF21545 to AAF21588 encode the
CC Neisseria proteins given in AAB58550 to AAB58593, and AAF21589 to
CC AAF21606 represent PCR primers which are used in the exemplification of
CC the present invention. The NMB genome and fragments from it have
CC antibacterial activity, and can be used in vaccines and gene therapy.
CC Neisseria nucleic acids, proteins and/or antibodies which binds to the
CC proteins can be used in compositions for treating or preventing infection
CC due to Neisserial bacteria or as a diagnostic reagent for detecting the
CC presence of Neisserial bacteria or of antibodies raised to Neisserial
CC bacteria. Computers, computer memory, computer storage medium or computer
CC databases can be used in a search to identify open reading frames (ORFs)
CC or coding sequences within the NMB genome. The DNA sequences provide
CC further opportunities to find antigenic or immunogenic proteins which are
CC more effective in vaccines than the outer membrane proteins currently
CC used.
XX
SQ Sequence 172325 BP; 43072 A; 47583 C; 41465 G; 40205 T; 0 other;

Query Match 6.4%; Score 107; DB 21; Length 172325;
Best Local Similarity 61.8%; Pred. No. 5.6e-21;
Matches 170; Conservative 0; Mismatches 105; Indels 0; Gaps 0;

```
Qy    237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
          | | | | | |   || ||||   |||||| ||      ||  ||||| |  ||||| ||
Db 122937 cgaacggacagggtttgaaggtgttatcggttatgaaacccatttttcagggcacggaca 122996

Qy    297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
          |||||  ||    || |||||  | ||||  |||  |   |  |||||||     |||  |
Db 122997 tgaagtacacagtccgttcgatcatcatgattcaaaaagcacttctgatttcagcggcgg 123056

Qy    357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
          |   |  | |||  || |   ||||||   | |||  |    ||  |  |||  |||||| |
Db 123057 tgtagacggcggttttactgtttaccaacttcatcgaacagggtcggaaatccatccgga 123116

Qy    417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
```

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          || ||  |||||||||||  || |||  |||  |||||  |  |||  |||  ||  ||||||||
Db 123117 ggatggatatgacgggccgcaaggcagcgattatccgccccccggaggagcaagggatat 123176

Qy    477 atacagctacgacataaaaggcgttgcccaaaata 511
          |||||||||  |  | |||||   | |   |||  |
Db 123177 atacagctattatgtcaaaggaacttcaacaaaaa 123211
```

RESULT 42
AAZ12043
ID AAZ12043 standard; DNA; 375 BP.
XX
AC AAZ12043;
XX
DT 08-OCT-1999 (first entry)
XX
DE Neisseria meningitidis partial ORF29 sequence.
XX
KW Neisseria meningitidis; Neisseria gonorrhoeae; antigen; vaccine;
KW treatment; Neisseria infection; meningitis; septicaemia; gonorrhea; ss.
XX
OS Neisseria meningitidis.
XX
PN WO9924578-A2.
XX
PD 20-MAY-1999.
XX
PF 09-OCT-1998; 98WO-IB01665.
XX
PR 01-SEP-1998; 98GB-0019016.
PR 06-NOV-1997; 97GB-0023516.
PR 14-NOV-1997; 97GB-0024190.
PR 18-NOV-1997; 97GB-0024386.
PR 27-NOV-1997; 97GB-0025158.
PR 10-DEC-1997; 97GB-0026147.
PR 14-JAN-1998; 98GB-0000759.
XX
PA (CHIR-) CHIRON SPA.
XX
PI Grandi G, Masignani V, Pizza M, Rappuoli R, Scarlato V;
XX
DR WPI; 1999-327407/27.
DR P-PSDB; AAY38580.
XX
PT Proteins from Neisseria meningitidis and N. gonorrhoeae useful for
PT diagnosis, treatment and prevention of infection
XX
PS Claim 9; Page 143; 524pp; English.
XX
CC Nucleotide sequences AAZ11972-Z12358 represent open reading frames
CC (ORFs) of Neisseria meningitidis and N. gonorrhoeae which encode
CC antigenic proteins (see AAY38499-Y38944). The antigenic proteins, their
CC fragments, their nucleic acids and antibodies are used for diagnosis,
CC prevention (as vaccines) or treatment of Neisseria infections,
CC such as meningitis, septicaemia and gonorrhea. Both organisms
CC are closely related. Fragments of the nucleic acids are useful
CC as hybridisation probes and antisense reagents.
XX
SQ Sequence 375 BP; 105 A; 89 C; 90 G; 90 T; 1 other;

Query Match 5.9%; Score 98; DB 20; Length 375;
Best Local Similarity 59.6%; Pred. No. 8.1e-20;
Matches 164; Conservative 0; Mismatches 111; Indels 0; Gaps 0;

```
Qy    237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
          | | | | | |   || ||||   |||||| ||      ||  ||||| |  ||||| ||
Db     27 cgaacggacagggtttgaaggtgttatcggttatgaaacccatttttcagggcacggaca 86

Qy    297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
          |||||  ||    || |||||  | ||||  |||  |   |  |||||||     |||  |
Db     87 tgaagtacacagtccgttcgatcatcatgattcaaaaagcacttctgatttcagcggcgg 146
```

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Qy    357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
          |   |  | ||| || |   ||||||   | ||| |     | |  ||| |||||| |
Db    147 tgtagacggcggttttactgtttaccaacttcatcgaacatggtcggaaatccatccgga 206

Qy    417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
          || |  ||||||||||| || |  |     |||||  | |||  ||| || |||||||||
Db    207 ggatgaatatgacgggccgcaagcagcgnattatccgccccccggaggagcaagggatat 266

Qy    477 atacagctacgacataaaaggcgttgcccaaaata 511
          |||||||||  |  | |||||   | |   ||| |
Db    267 atacagctattatgtcaaaggaacttcaacaaaaa 301
```

RESULT 43
AAA81340
ID AAA81340 standard; DNA; 375 BP.
XX
AC AAA81340;
XX
DT 04-DEC-2000 (first entry)
XX
DE N. meningitidis MenB polynucleotide sequence ORF number 19.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; genome; immunogenic;
KW antigen; vaccine; diagnosis; infection; antibacterial; identification;
KW Meningococcus B; MenB; ds.
XX
OS Neisseria meningitidis.
XX
PN WO200022430-A2.
XX
PD 20-APR-2000.
XX
PF 08-OCT-1999; 99WO-US23573.
XX
PR 09-OCT-1998; 98US-0103794.
PR 30-APR-1999; 99US-0132068.
XX
PA (CHIR) CHIRON CORP.
XX
PI Frazer CM, Hickey E, Peterson J, Tettelin H, Venter JC;
PI Masignani V, Galeotti C, Mora M, Ratti G, Scarselli M, Scarlato V;
PI Rappuoli R, Pizza M;
XX
DR WPI; 2000-318079/27.
XX
PT Isolated nucleotide sequences of Neisseria meningitidis which can be
PT used in the diagnosis and treatment of N. meningitidis infection and
PT other Neisserial infections, for example, N.gonorrhoea -
XX
PS Disclosure; Page 204; 1760pp; English.
XX
CC The present invention describes methods of obtaining immunogenic
CC proteins from Neisseria genomic sequences. AAA81453 to AAA82414
CC represent specifically claimed Neisseria meningitidis genomic DNA
CC sequences; AAA81260 to AAA81303 and AAB25620 to AAB25663 represent
CC Neisseria DNA sequences and their corresponding proteins; AAA81254 to
CC AAA81259 and AAA81304 to AAA81321 represent PCR primers used in the
CC isolation of Neisseria meningitidis DNA sequences; and AAA81322 to
CC AAA81452 represent Neisseria meningitidis MenB polynucleotide ORF
CC sequences, which are all used in the exemplification of the present
CC invention. The nucleic acid sequences, protein sequences, and antibodies
CC against them, can be used in the manufacture of a composition. The
CC composition can be used as a medicament (or in the manufacture of a
CC medicament) for treating, preventing or diagnosing infection due to
CC Neisserial bacteria. For example, some of the identified proteins could
CC be components of vaccines against Meningococcus B; against all serotypes;
CC and/or against all pathogenic Neissariae. Identification of sequences
CC from the bacterium will also facilitate production of biological probes,
CC particularly organism-specific probes. Attempts to make efficacious
CC Meningococcus B vaccines have failed mainly due to antigen tolerance.
CC Multivalent vaccines have also been tried but none have successfully
CC overcome antigenic variability. The provision of further, complete
CC sequences may provide an opportunity to identify secreted or surface
CC exposed proteins that may be presumed targets for the immune system and
CC which are not antigenically variable or at least more conserved than
CC other more variable regions.
XX
SQ Sequence 375 BP; 105 A; 89 C; 90 G; 90 T; 1 other;

```
  Query Match              5.9%;  Score 98;  DB 21;  Length 375;
  Best Local Similarity   59.6%;  Pred. No. 8.1e-20;
  Matches  164;  Conservative    0;  Mismatches  111;  Indels    0;  Gaps    0;

Qy    237 ccagcaggcggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggca 296
          | | | | | |   || ||||   |||||| ||      ||  ||||| |  ||||| ||
Db     27 cgaacggacagggtttgaaggtgttatcggttatgaaacccatttttcagggcacggaca 86

Qy    297 cgaagtccattccccccttcgacaaccatgcctcacattccgattctgatgaagccggtag 356
          |||||  ||    || |||||  | ||||  ||| |   |  |||||||     |||  |
Db     87 tgaagtacacagtccgttcgatcatcatgattcaaaaagcacttctgatttcagcggcgg 146

Qy    357 tcccgttgacggattcagcctttaccgcatccattgggacggatacgaacaccatcccgc 416
          |   |  | ||| || |   ||||||   | ||| |     | |  ||| |||||| |
Db    147 tgtagacggcggttttactgtttaccaacttcatcgaacatggtcggaaatccatccgga 206

Qy    417 cgacggctatgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatat 476
          || |  ||||||||||| || |  |     |||||  | |||  ||| || |||||||||
Db    207 ggatgaatatgacgggccgcaagcagcgnattatccgccccccggaggagcaagggatat 266

Qy    477 atacagctacgacataaaaggcgttgcccaaaata 511
          |||||||||  |  | |||||   | |   ||| |
Db    267 atacagctattatgtcaaaggaacttcaacaaaaa 301
```

RESULT 44
AAF21611
ID AAF21611 standard; DNA; 349980 BP.
XX
AC AAF21611;
XX
DT 13-MAR-2001 (first entry)
XX
DE Neisseria meningitidis B nucleotide sequence SEQ ID NO:112.
XX
KW Neisseria meningitidis; Neisseria gonorrheae; immunogenic; vaccine;
KW diagnosis; antigen; detection; infection; gene therapy; antibacterial;
KW ds.
XX
OS Neisseria meningitidis.
XX
PN WO200066791-A1.
XX
PD 09-NOV-2000.
XX
PF 08-MAR-2000; 2000WO-US05928.
XX
PR 30-APR-1999; 99US-0132068.
PR 08-OCT-1999; 99WO-US23573.
PR 28-FEB-2000; 2000GB-0004695.
XX
PA (CHIR) CHIRON CORP.
PA (GENO-) INST GENOMIC RES.
XX
PI Pizza M, Hickey E, Peterson J, Tettelin H, Venter JC, Masignani V;
PI Galeotti C, Mora M, Ratti G, Scarselli M, Scarlato V, Rappuoli R;
PI Frazer CM, Grandi G;
XX
DR WPI; 2000-647603/62.
XX
PT Neisseria meningitidis B full length genome sequence and open reading
PT frames are used to detect, treat and prevent Neisserial infections -
XX
PS Claim 7; Appendix A; 692pp; English.
XX

```
CC   The present invention describes the full length genome of
CC   Neisseria meningitidis B (NMB). The sequences in AAF21544 and AAF21607
CC   to AAF21613 represent fragments of the NMB genomic sequence, as the
CC   sequence was too long to go in a record on its own it was split into 8
CC   sequences which overlap each other at the beginning and end of each
CC   sequence by 49980 bp (i.e. the last 49980 bp of AAF21544 is repeated at
CC   the beginning  of AAF21607, the last 49980 bp of AAF21607 are repeated at
CC   the beginning of AAF21608, and so on). AAF21545 to AAF21588 encode the
CC   Neisseria proteins given in AAB58550 to AAB58593, and AAF21589 to
CC   AAF21606 represent PCR primers which are used in the exemplification of
CC   the present invention. The NMB genome and fragments from it have
CC   antibacterial activity, and can be used in vaccines and gene therapy.
CC   Neisseria nucleic acids, proteins and/or antibodies which binds to the
CC   proteins can be used in compositions for treating or preventing infection
CC   due to Neisserial bacteria or as a diagnostic reagent for detecting the
CC   presence of Neisserial bacteria or of antibodies raised to Neisserial
CC   bacteria. Computers, computer memory, computer storage medium or computer
CC   databases can be used in a search to identify open reading frames (ORFs)
CC   or coding sequences within the NMB genome. The DNA sequences provide
CC   further opportunities to find antigenic or immunogenic proteins which are
CC   more effective in vaccines than the outer membrane proteins currently
CC   used.
XX
SQ   Sequence 349980 BP; 87189 A; 93501 C; 84627 G; 84663 T; 0 other;


  Query Match              2.7%;  Score 45.4;  DB 21;  Length 349980;
  Best Local Similarity   55.4%;  Pred. No. 0.11;
  Matches  108;  Conservative    0;  Mismatches   86;  Indels    1;  Gaps    1;

Qy     538 agcaccggacaacggcttgtcgaccgtttccacaataccggtagtatgctgacgcaagga 597
           ||||| |||   || | |||| ||||   ||| | | || ||   ||  || || |||
Db  205925 agcactggaattcgccctgtctaccgccgccaagaaaaaggcagaccgcgaacacatgga 205984

Qy     598 -gtaggcgacggattcaaacgcgccacccgatacagccccgagctggacagatcgggcaa 656
            ||  ||| |  | |||| |||| |||| |  |   ||       |   | | | |  |
Db  205985 cgtgcgcgtccaaatcaaccgcgacaccggcgaataccaaaccttccgccgctggctgat 206044

Qy     657 tgccgccgaagctttcaacggcactgcagatatcgtcaaaaacatcatcggcgcggcagg 716
           || |||||| |    | |   |  | | ||| |||  |||| ||||   |       ||
Db  206045 tgtcgccgatgaagactatacctatcccgatgtcgaaaaaaccatcgaggaaatccaaga 206104

Qy     717 agaaattgtcggcgc 731
           ||||||  |||| |
Db  206105 ggaaattcccggcac 206119


RESULT  45
AAQ21833
ID   AAQ21833 standard; DNA; 390 BP.
XX
AC   AAQ21833;
XX
DT   08-JUN-1992  (first entry)
XX
DE   Randomising oligonucleotide used in SPERT mRNA prepn.
XX
KW   Systematic polypeptide evolution by reverse translation; SPERT;
KW   ligand binding; ss.
XX
OS   Synthetic.
XX
PN   WO9202536-A.
XX
PD   20-FEB-1992.
XX
PF   01-AUG-1991;   91WO-US05463.
XX
PR   02-AUG-1990;   90US-0561968.
XX
PA   (COLS ) UNIV OF COLORADO.
XX
PI   Gold L,  Tuerk C;
XX
DR   WPI; 1992-080018/10.
XX
PT   New method of systematic polypeptide evolution by reverse
PT   translation - by linking each polypeptide in sample mixt. to
PT   individualised mRNA allowing further synthesis of selected
PT   polypeptide(s)
XX
PS   Example; Page 55; 102pp; English.
XX
CC   The sequence is that of an example randomising oligonucleotide which
CC   is used in the prepn. of mRNA encoding candidate polypeptides for the
CC   method of systematic polypeptide evolution by reverse translation
CC   (SPERT). The method provides a rapid way of isolating and identifying
CC   polypeptide ligands which bind to target mols. The polypeptide ligands
CC   can be used in e.g. assay methods, diagnostic procedures, cell sorting,
CC   as activators or inhibitors of target mol. function, as probes, as
CC   sequestering agents, drug delivery vehicles, modifiers of hormone
CC   action and as catalysts. See also AAQ21830-Q21832.
XX
SQ   Sequence 390 BP; 125 A; 126 C; 133 G; 6 T; 0 other;


  Query Match              2.4%;  Score 39.8;  DB 13;  Length 390;
  Best Local Similarity   45.8%;  Pred. No. 0.092;
  Matches  137;  Conservative    0;  Mismatches  162;  Indels    0;  Gaps    0;

Qy     246 ggccattaaaggaaatatcggctacattgtccgcttttccgatcacgggcacgaagtcca 305
           ||||||  | |   |   || | ||   | |  |     |||  |||   |||| | | |
Db       2 ggccatggacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacga 61

Qy     306 ttccccccttcgacaaccatgcctcacattccgattctgatgaagccggtagtcccgttga 365
             |  |  |||| || | | |    |   |||    || || | ||       ||  ||
Db      62 cgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacga 121

Qy     366 cggattcagcctttaccgcatccattgggacggatacgaacaccatcccgccgacggcta 425
           ||    |  |    ||  |  | |    ||||   ||||  || |   || ||||| | |
Db     122 cgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacga 181

Qy     426 tgacgggccacagggcggcggctatcccgctcccaaaggcgcgagggatatatacagcta 485
           ||||     | | || || | |   ||    | | | ||     ||     ||  | |
Db     182 cgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacga 241

Qy     486 cgacataaaaggcgttgcccaaaatatccgcctcaacctgaccgacaaccgcagcaccg 544
           ||||    | | ||  | | |  |   |  |  | ||     |||| ||  |  |  ||
Db     242 cgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacgacg 300


Search completed: June 30, 2002, 14:52:17
Job time: 71370 sec
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